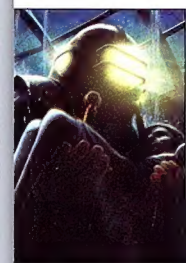


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Issue 65 | June 2006

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GAMES SPECIAL!

BIOSHOCK EXCLUSIVE PREVIEW
GAMES INDUSTRY GET INTO IT



DELL'S DUAL-CORE MONSTER

2GB 7900GS laptop puts desktops to shame!

ULTIMATE LINUX

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Porn to Power

Wikipedia's Jimmy Wales

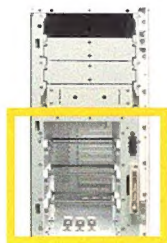
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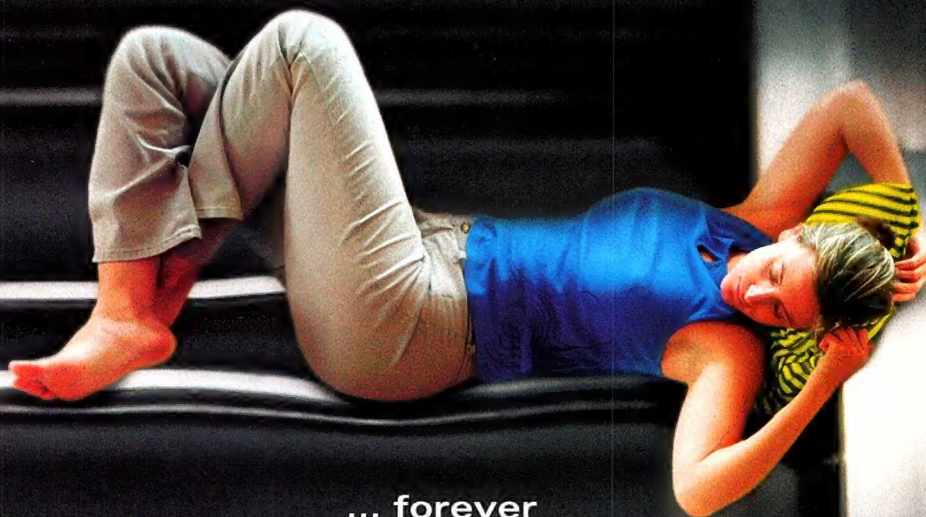
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Geek paradiso

Sometimes you just have to share the love around. When we get loads of kit for review, we lay it out in labs and have arm wrestles over who gets to roll in it first. We're not strange, who wouldn't love to frolic in a pile of 7900GTX cards? Or write up your story in Notepad on a dual-core, 2GB, 512MB video memory blingified laptop (hasn't Dell come a long way) just because you can? I do write in Notepad actually, it's all I need, but Logan and Craig think I'm behind the times or something.



So anyway, this month we had a particularly large haul, with reviews extended to match. Labs was a veritable geek paradise, replete with fast cards, sweet cases, PSUs, coolers, drives, screens and a projector to boot. Oh and cases of Buzz Monkey, but we can't touch them because they're for you (see page 63). I think Craig actually moved into labs for a while. Said something about 'being one with the kit'. As long as he doesn't start wearing underpants on his head I'm fine with that.

We also have two rather special features for you this issue that have been months in the making – an exclusive preview of Bioshock, Irrational's spiritual successor to System Shock 2, one of The Greatest Games Ever Made; and an educational insight on the games industry and how to get into it – from the mouths of the developers themselves. We talked to the hottest development houses in Australia about the industry, what it's like to work in it, and how to get started. If working with games are your dream, then this is for you!

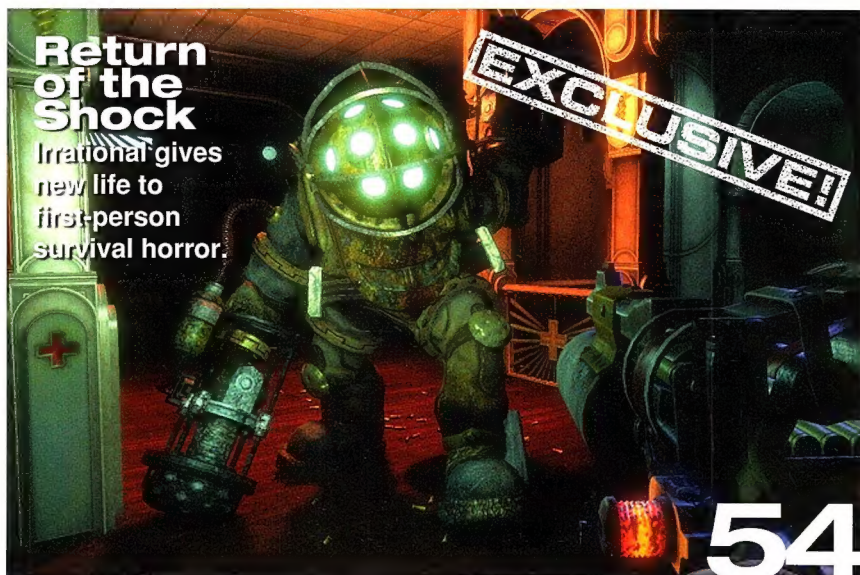
It's an uber-packed issue this month, so enjoy it and let us know what you think.

Ashton Mills

amills@atomicmpc.com.au

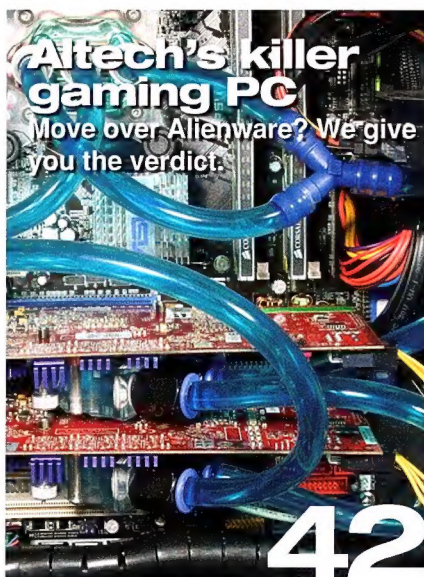
Return of the Shock

Irrational gives new life to first-person survival horror.



Aitech's killer gaming PC

Move over Alienware? We give you the verdict.



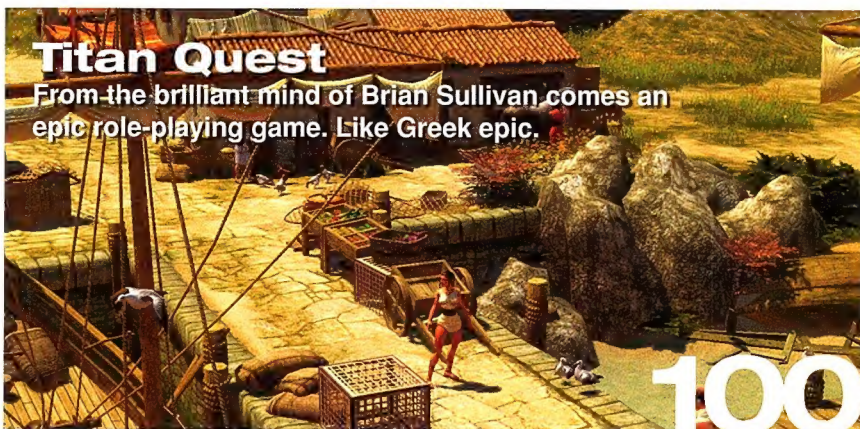
Jimmy Wales

The creator of Wikipedia unleashes his wisdom.



Titan Quest

From the brilliant mind of Brian Sullivan comes an epic role-playing game. Like Greek epic.



A Green Code is no longer required to access Green Club areas on the Atomic site. Winner!

COVER STORY ▽

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A world of 7900s

All the latest GeForce 7900GTX cards tested, benchmarked, rated and reviewed. Tough job, but someone's gotta do it.

Dell gaming notebook

It makes all other notebooks cry. That's what it says on the box, anyway.

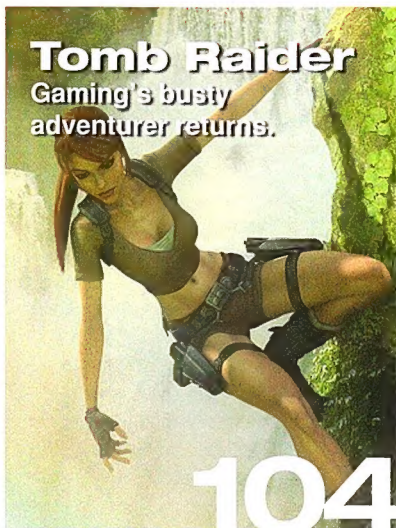


EXCLUSIVE!

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Tomb Raider

Gaming's busy adventurer returns.



104

Become a game developer

Wanna make games? Get into the biz with our essential guide.



64

LOGIN

Information, just the way you need it. Delectably digestible.

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HARDCORE

Atomic does hardware like nobody else. Hot damn, that's sexy.

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GAMEPLAY

Games are good. You know it, and we know it. Enjoy them here!

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update

Tech news you can't live without. Seriously, it's that awesome.



Use of deadly StarForce

Has StarForce finally met its match? Logan Booker referees.

When you find your company on the receiving end of a class-action lawsuit, you know the goose has been at least slightly sautéed. Such is the case of StarForce, which we found out in late March that it was – indirectly – facing potentially millions of disgruntled users who are less than fond of StarForce's Digital Rights Management (DRM) software, designed



Preparing for battle: StarForce may soon be under attack with the number of plaintiffs expected to be in the millions.

to prevent the use of CD/DVD duplicates of protected applications.

According to the class action complaint, (eplaw.us/st/UbisoftComplaint032406.pdf) StarForce's DRM 'interferes with or replaces the software drivers for the optical drives (CD and DVD drives) integrated in users' computers' and 'potentially compromises Windows operating systems' security ... The drivers contained in StarForce DRM ... provide ring 3 applications access to ring 0 functions ('Security Compromise').

Facing the wrath of StarForce's alleged misdoings is Ubisoft, a game publisher/developer that makes heavy use of StarForce's copy protection in its titles. These include King Kong and Splinter Cell: Chaos Theory. Although Ubisoft very recently stated that it will discontinue use of StarForce in future games, it may be too little, too late.

StarForce has for some time had to deal with attacks by users unhappy with games using the DRM. News site boingboing.net used the term 'malware' to describe the protection and if you whack 'starforce' into Google, the second

result after the StarForce site itself is a website advocating users boycott (www.glop.org/starforce) StarForce by not buying games that use the DRM. No mean feat in the world of page ranking.

Of course, StarForce has vehemently denied continual accusations. An article by PR manager Dennis Zhidkov, dated October last year on StarForce's website (<http://www.star-force.com/protection/protection.phtml?c=256&id=658>) refutes claims that the DRM drivers are difficult to remove or destructive.

'The driver can be uninstalled using the StarForce tool available at our website, but will

“StarForce is facing potentially millions of disgruntled users...”

be reinstalled if the protected software is run again, it doesn't run without the driver,' states the article.

'Our technical support received zero feedback from people who had to totally rebuild their computers because of StarForce drivers. According to our research, those of [sic] users that do run into compatibility problems are beginner-level-hackers that try to go around our protection system.'

It will be interesting to see if the suit makes it to court and if it does, the implications it has on copy protection schemes in general. The complaint states that considering Ubisoft has sold 'millions' of copies of its games globally, the number of plaintiffs in the case could easily be in the millions also.

Portable consoles

Not happy with having consoles in their homes, it didn't take long for someone to come up with the bright idea of making them portable. So, for your viewing pleasure, here's a condensed history of the handheld console!

1979

Microvision Board game company Milton Bradley released the first-ever handheld console. It ran at 100KHz and had a 16-pixel square screen. It made a couple of mil before dying out in the early 1980s.



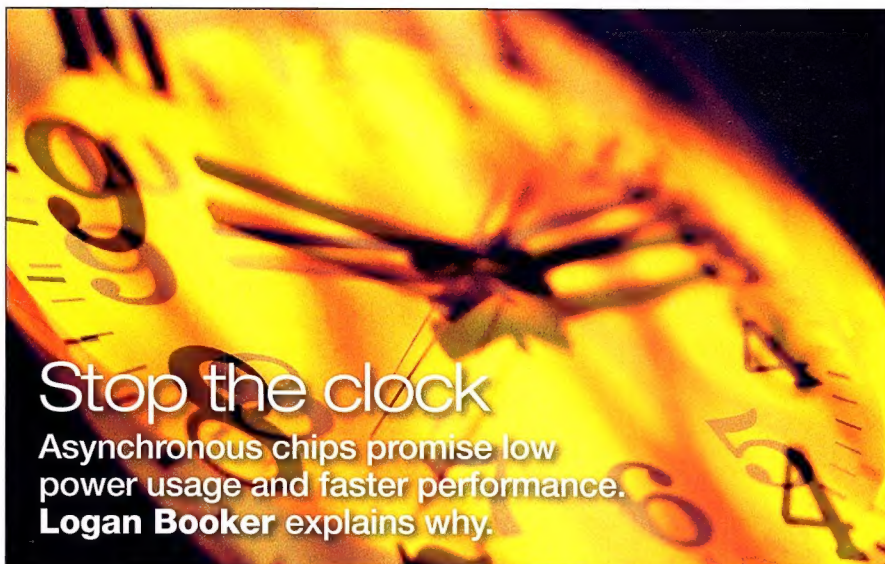
Game Boy/Atari Lynx Ten years allowed technology to make enough advances to bring us the 4MHz, 8KB Game Boy from Nintendo. Upon its release, many games were immediately available, the most popular being Tetris. 1989 saw the release of the technologically superior but commercially unsuccessful Atari Lynx.

1989

1990

Sega Game Gear Sega released its own handheld, the Game Gear – a portable version of the Master System. Although technically superior to its competitor the Game Boy, a short battery life and small catalogue of games saw it crushed.





Stop the clock

Asynchronous chips promise low power usage and faster performance. Logan Booker explains why.

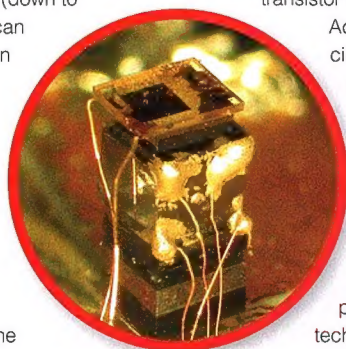
Recently, ARM and Philips announced the release of a 'clockless' microprocessor – the ARM996HS – designed as a collaborative effort by the two companies.

Clockless? Yes you read that right. Instead of relying on a timed clock signal to send and receive data, the ARM996HS uses a special 'handshaking' technology to moderate data flow. As a result, the chip is nowhere near as sensitive to electromagnetic interference (EMI), has lower power consumption (down to zero for standby modes) and can theoretically perform faster than a clocked chip as its speed is governed by the transfer of data, not the tick of a clock. Obviously, all of these benefits apply well to the industry of microprocessors for use in PDAs, smart cards and other portable devices.

The clockless or 'asynchronous' circuit is just one of many technologies chip makers are looking at today to overcome the problems with shrinking die sizes. Synchronous chips have to be designed with the worst case scenario in mind, limiting their capabilities so they'll function under duress.

Asynchronous chips, on the other hand, are much more flexible. The lack of a clock means they can tolerate a lot more EMI, which alone makes them highly desirable.

Perhaps the two benefits most relevant to the CPU market are a disregard for variability of transistor to transistor performance and adaptation to temperature changes. For current synchronous circuits, if there's too great a variance in the quality of the transistors, the circuit is no good – in the case of nanometre processor manufacturing, high quality transistors are required to prevent charge leakage. As dies shrink, it becomes harder to assure quality from transistor to transistor.



Additionally, an asynchronous circuit, when so programmed, can moderate its power usage and data transfer rates automatically. If heat becomes a problem, the circuit can slow down the transfer of data, maintaining stability, while a cooler environment will speed up performance. The handshaking technology implemented in ARM's

new clockless core is very flexible. It can work with clocked and clockless systems, and it's been in use for a number of years (www.handshakesolutions.com).

So, while quantum computers and other gaff are decades away, asynchronous circuits are here today and there's every possibility the technology will make the transition from small-scale implementations like PDAs to full-blown desktop CPUs.

short circuits

Mad man or genius? How about just bald?



Apple has announced an official way to dual boot Windows XP and Mac OS on its Intel-powered Macs. The software solution, called Boot Camp, will generate all the drivers needed for Windows XP to drive a number of Mac devices, however the solution isn't perfect. Apple's Bluetooth implementation and USB modem won't function in XP.

Microsoft is making use of peer-to-peer technology to create an extremely redundant back-up and storage system. In the same way each user on a P2P network has only pieces of a file, so too will the back-up system store files as pieces on multiple drives. Called BitVault, Microsoft has plans to roll the technology out shortly.

Lucent Technologies has accused Microsoft of using MPEG-2 in its next-gen console, the Xbox 360, without properly licensing it. Why Lucent couldn't have approached MS before the launch of the console remains a mystery, but it likely has something to do with the fact that there's more cash to be made by playing 'Gotcha!'.

There's finally a company brave enough to try and store the Internet on a single hard drive. Using server farms of gigantic proportions to filter the Web into useful blocks, users will be able to download packs to access specific topics via their browser. As such, sites like Wikipedia will be included in the filtering.



Nintendo DS/PSP With technology finally meeting the demands of gamers for colour 3D graphics, Nintendo released the DS. With two screens and a stylus, the possibilities for the handheld seemed endless. Shortly after the DS came Sony's PSP, offering music and movie playback, along with impressive 3D graphics. Other notable handhelds released in the 2000s include the N-Gage, Game Boy Advance and Game Boy Micro.

1998

Neo-geo/Game Boy Colour After the lacklustre debut of the Neo Geo Pocket in 1997, Neo Geo released a colour version of the portable console, called the Pocket Color, in 1998. It gave the Game Boy a run for its money, but didn't have staying power in Western markets. 1998 also saw the debut of the Game Boy Color.



2004

Feel educated? Sure you do! Check Then & Now next month for a definitive history on potatoes. They're brown, tasty and deadly in large quantities.



Intel's leap ahead

Ben Mansill reports from the IDF in Taipei, home of the PC component and venue of Intel's most important product launch in many years.

The Intel Developer Forum (IDF) in April this year was a showcase for the products and technologies Intel hopes will put it back in the number one spot for CPUs, and forge ahead with new platforms and technologies it hopes will

bring a prosperous future, such as the marginally confusing Viiv.

We left IDF in no doubt that this wasn't just another step forward. Intel believes that this IDF was the most significant for at least five years.

To the Core

IDF heralded Intel's vision for its new Core micro architecture, and for its unbridled enthusiasm and confidence for the new technology and its future.

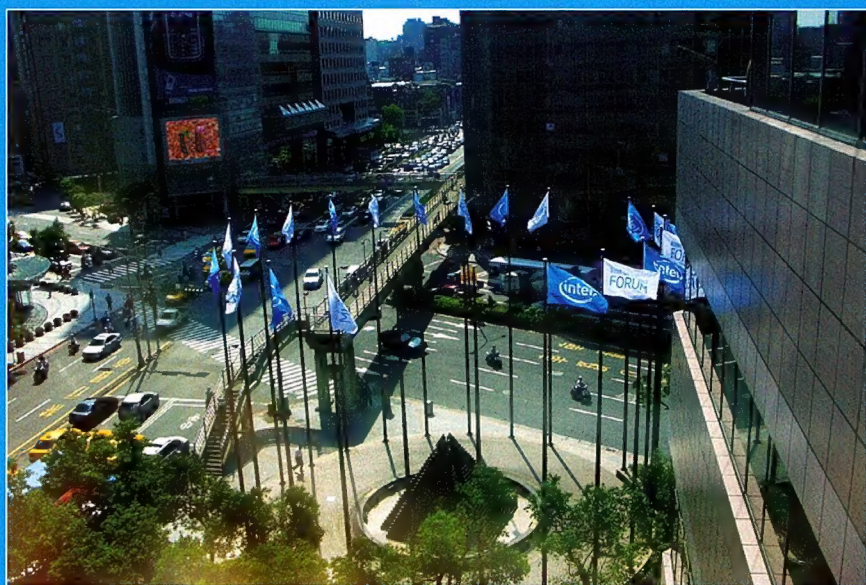
Intel is determined to regain ground lost in recent years to AMD. Its Core micro architecture will drive this, and signals a new era in the way CPUs are designed, manufactured and used to power our PCs. The desktop version of Core – 'Conroe' – is rumoured to outperform the best AMD currently offers, the dual-core FX-60, by up to 40 percent in gaming/3D.

By the end of this year, at least 70 percent of Intel's CPU production will be multi-core, rising to 90 percent by the end of 2007. Initially, most production will be dual-core, but quad-core desktop CPUs ('Kentsfield') will be available in the first quarter of 2007.

Intel readily admits the move to multi-core CPUs was driven by the Pentium 4 thermal limits, but the new Core is so much more than just two Pentium 4's side by side – which is what we had with the Pentium D, a pure marketing answer to AMD's X2. With Core, Intel presents us with an almost completely new CPU – with its long evolution in the years ahead starting now.

A new power

Production will start using the 65nm process,



The view from above. Intel believes this IDF is the most significant one for at least five years. It is confident of the new Core micro architecture's bright future.

a technology that enables lower power consumption, and hence lowers voltages. For the desktop Core CPU, Intel claims a 40 percent reduction in power consumption, coupled with a 40 percent increase in performance over its predecessor the Pentium D. This enormous 'leap ahead' (Intel's new marketing slogan) is the biggest jump we've seen in at least five years.

Achieving this came through not solely the 65nm process, or indeed the dual core architecture.

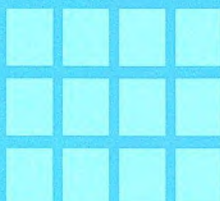
“Doing far more work per cycle is the key behind Core's performance... the 'Megahertz wars' may be over.”

Intel told us that every part of the Pentium 4 architecture was evaluated, ditched, redesigned or enhanced as necessary. To do this effectively Intel has perfected what it calls the 'follow the

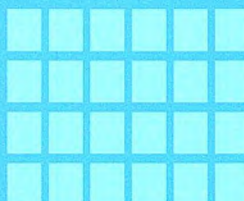
sun' design efficiency. As each working day ends in a design office, the WIP for Core is picked up by another in region where the day was just beginning. While the lion's share of Core's design was managed in Israel, over 400 Intel engineers globally had their hands on the code at some point. The end result, Intel says, is that it was able to rework the entire IA-32 micro architecture to an extent that has guaranteed unbeatable performance to satisfy consumers, and stay untouchable by AMD.

Many new technologies were added, and some big ones we were used too were taken away. Gone is the Netburst architecture, abandoned in favour of a much shorter pipeline. Core's efficiency and enormous cache (up to 4MB for Conroe, shared between both cores) allows it to increase performance at lower clock rates than the Pentium 4 it replaces. Doing far more work per cycle is the key behind Core's performance, and although we've been hearing it for years, the 'Megahertz wars' may finally be over.

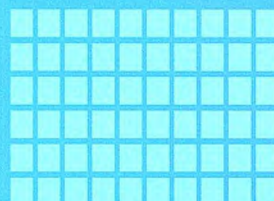
12 Cores



48 Cores



144 Cores

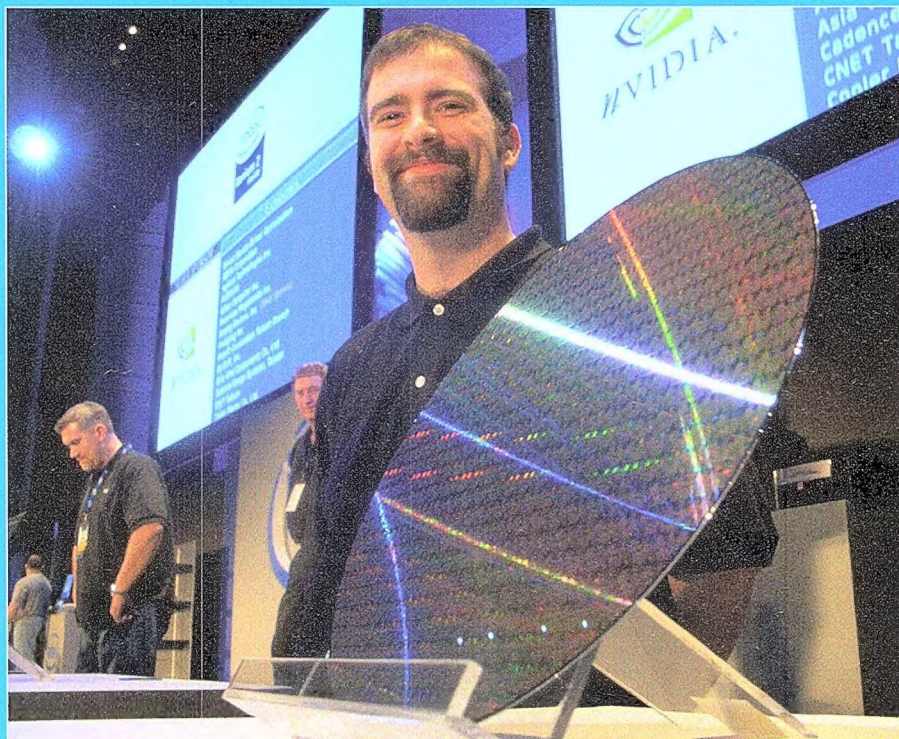


Intel is working hard to make 90nm and 65nm fabrication processes function with its plans for its new range of CPUs. However, it believes that that new technologies will need to be embraced and adopted once processes hit 18-22nm.

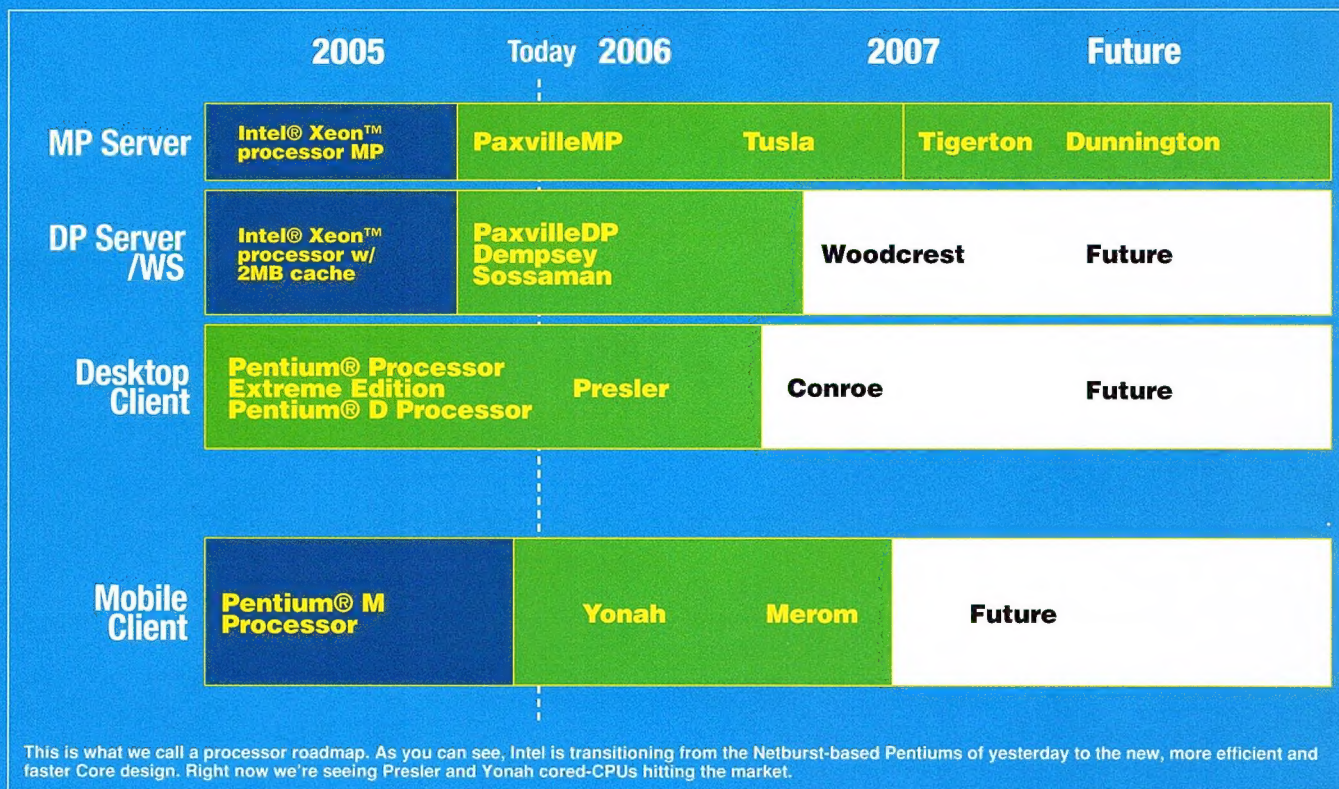
More and more cores

As for just how many cores Intel plans to pack on a die, two factors dictate this. First, the memory subsystem will need to keep pace and feed the cores efficiently. Expect to see significant developments in that space. Next, the process size itself. Right now 65nm is workable for the quad core 'Kentsfield', but remember that each new core also needs a wallop of cache to serve it, and the amount of cache used by Core is an enormous jump over the piddly 512MB and 1MB cache's we are used to. Intel will need to continue to reduce the process size to match the increase in CPU cores and its cache. It expects to max out at an 18-22nm process by around 2015, before alternative technologies need to be used, although Intel continues to work on improvements to current manufacturing methods that may extend that timeframe.

Besides farewelling the Netburst architecture and its long pipeline/high frequency way of doing things, Core also abandons HyperThreading



Cores galore. Intel shows off its new range of products, with solid confidence and faith in the WiMAX wireless standard. Intel demonstrated a prototype notebook chipset integrating both Wi-Fi and WiMAX. And although it's hard to explain what VliV is, Intel's placed their full support behind the technology.



(HT). While Intel didn't dismiss the possibility of a re-invented version of HT being introduced later, it claims that two dedicated physical cores running without HT will outperform two cores with HT running. Saving power was another reason for killing off HT. Intel isn't intensely focused on having only the bare minimum logic active and

consuming power in Core, so the additional core logic required to run HT drew more power than was acceptable and it was ditched. It may prove that HT's only important contribution to the history of CPUs is that it forced developers to think in threads. Not a bad thing at all considering current technology.

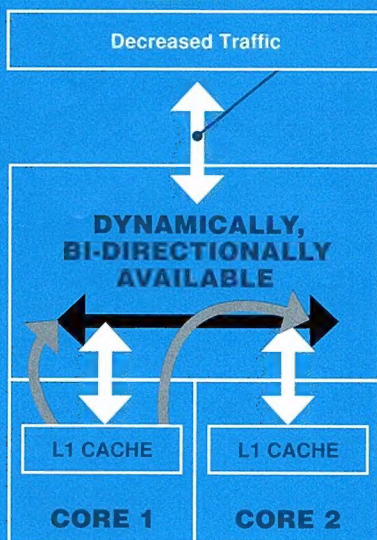
Cache heaven

A 65nm fabrication process is a great step forward for Intel.

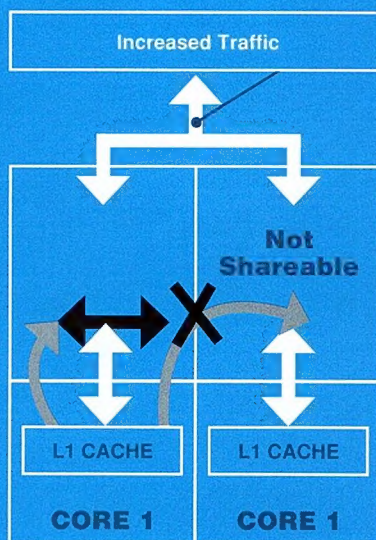
65nm enables more transistors on a chip, and Intel has spent much of the budget it gained with the move to a tighter process on cache. It's no secret that a big cache can equal better performance. It's primarily how the older Xeon and Extreme Edition CPUs delivered such grunt, and why they were expensive. The nice thing about Core is that Intel has matched its powerful and efficient new micro architecture with a whopping great slab of L2 cache. All 4MB of it.

Intel® Advanced Smart Cache Dynamic L2 Cache Usage

Core™ Microarchitecture Shared L2



Independent L2



Considering most of the time both cores on a dual and quad core CPU will be busy on the same task (well, threads of the same task) it makes sense to allow them to share a cache. Any other design would simply cripple the performance of both cores.



Intel's 'Montevallo' concept notebook showed an all-new form factor where the screen slides forward to the edge of the keyboard.

futureproof

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Compression confessions

Logan Booker explains why there's no such thing as miracle data compression algorithms.

Data compression has solved a great deal of problems, while making others easier to deal with. For example, the V.92 standard for dial-up modems incorporates a compression algorithm called V.44 that automatically compresses and decompresses data, making dial-up Internet connections reasonably bearable. From backing up information to improving data transmission speeds, compression has proved invaluable in the industry of information technology.

Believe it or not, we've reached the pinnacle of data compression with programs like WinZip, WinRAR and 7-Zip. All these programs use the same compression algorithm – they're just tweaked and enhanced in different ways. Hence, the gains between them, while noticeable, are not greatly significant. So, without divine intervention, there's no chance of some miracle technology in the future that will compress one megabyte into one byte. It's just not mathematically possible.

The algorithm these programs use is called 'sliding window' or Lempel/Ziv (LZ) compression, where the algorithm scans data from the compression stream in a thousand or so byte (defined by the specific variation of the LZ variant) moving 'window', while also gathering data from a 'look-ahead' buffer. When data in the look-ahead buffer is found that matches that of data found in the sliding window, the algorithm assigns a pointer to the data of a size smaller than the original data. This is where compression occurs. The end result is a file containing chunks of data from the original data stream and numerous pointers to these data chunks. WinZip uses a modified LZ77 algorithm, WinRAR LZSS and 7-Zip LZMA.

As you can see from this explanation, data compression is all about removing or reducing redundancy. To figure out how redundant a chunk of data is, we must first figure out how random it is. This in turn will give us an estimate

on how much we can compress that data by. The amount of randomness in a chunk of data is referred to as its 'information entropy', and the formulas to predict the amount of entropy in a chunk of data were created by Claude Shannon, a US mathematician. Using these formulas, it's possible to figure out the average bits required per character of data to compress that character.

The more random the information, the less redundant it is and the more bits required to compress a single character. This is why data that is already compressed will not compress any further (it also doesn't help that most modern compressor use the same, slightly modified compression algorithm).

“data compression is about removing redundancy.”

Simply put, it's a mathematical impossibility for the level of compression to exceed the uncompressed data size in bits times the entropy of that data without special provisions. These provisions however would require knowledge of the type of data being compressed. This is why JPEG compression works better on an image than your normal LZ-based algorithm (JPEG compression likewise would do a poor job on normal data).

So, let's hope holographic storage takes off because WinZip isn't going to get much better, if at all.

FACTOMATIC

- The term '**coulrophobia**' is used to describe someone who has a fear of clowns, as opposed to a fear of coulores.
- Until recently, the Velocity Engine (otherwise known as AltiVec) in Apple Macs was the most capable Single Instruction Multiple Data (SIMD) technology available for consumer PCs. Intel's SSE2 and SSE3 instruction sets however, have since overtaken it.
- Potatoes are part of the nightshade family of plants and, as such, contain levels of the glycoalkaloid toxin solanine. Neurological and gastrointestinal problems are associated with high doses of solanine, and enough can be found in a 'green' potato to cause these effects in some.
- Titanium is one of the most heat and corrosion-resistant metals in the universe, second only to platinum. Titanium dioxide is also a great reflector of UV light, and as such, is used in everything from paint to sunscreen.
- Nitrogen narcosis, a condition caused by breathing nitrogen gas under pressure, is similar to being intoxicated.



BIOTECH NIKOLA TESLA

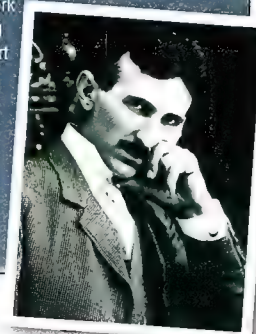
Electricity, radio and towers that shoot bolts of energy at tanks and infantry.

Although many believe Thomas Edison to be the father of electricity, it was Serbian-born Nikola Tesla that brought us the wonders of alternating current (improving on the work of US physicist William Stanley Jr.). Born on the July 10, 1856, Tesla always had a keen interest in inventions; working for a telephone company in his earlier years, it is argued that he designed the world's first loudspeaker during this time.

It didn't take long for Tesla to end up working for Thomas Edison, who took advantage of the naïve Serbian. Tesla helped redesign Edison's original DC generator – unfortunately for Tesla, Edison failed to pay for the work (Tesla had been promised a considerable sum), leaving him with nothing to do but leave the company. This sort of discrimination plagued Tesla for much of his life.

Tesla died in 1943 unrecognised and unrewarded for some of the greatest discoveries in the fields of electrical engineering, magnetism and radio. It was only after many years that his achievements were officially recognised and Tesla correctly attributed with their creation.

Source: www.wikipedia.org



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The big picture behind technology and the world around us

Disappointing consolidation

102 keys, and only 29 of them work. Tim Dean asks Bethesda what the Oblivion was thinking when it designed the PC interface.

I'm bitterly disappointed in Oblivion. Yeah, you heard me right. *Bitterly disappointed.*

Although I should probably clarify that statement just in case you get the mistaken impression that I don't actually think it's the best RPG ever made. It clearly is (at least in its chosen sub-genre of first person Tolkien/D&D-inspired RPGs).

It breaks new ground in so many areas, and refines the concept of the open-ended RPG to a degree not seen since, well, Morrowind.

In fact, Oblivion is one of those few games where I catch myself pausing frequently just to admire my present environs, despite the potentially perilous ruin that could befall my avatar lest I relax my guard for even a moment.

It's also one of those games that I'm looking forward to playing for months, if not years, to come. Like Morrowind, Oblivion will only get better over time – at least on the PC version – because of the fortunate conjunction of a rabidly enthusiastic and incredibly talented fan base with a comprehensive construction kit care of Bethesda.

Yet, I'm still disappointed.

And I'm sad to say my disappointment stems from a not unpredictable source: the ever present and corrupting influence of consoles.

Given its pedigree and the years of refinement that have gone into the Elder Scrolls series, it's heartbreaking to see the interface take such a massive leap backwards. And it's all because someone at Bethesda made the decision to create one unified interface for two very different platforms.

It's like mandating that handlebars be used to steer a car in order to standardise a production line.

Given the vast differences in interface hardware between PC and Xbox 360, it's startling that someone actually thought a single interface could be designed to take maximum advantage of them both.

And what's sadder is that Bethesda must have known that a common interface between the two platforms would inevitably lead to some

compromises in the PC interface, yet pressed on none the less. That's a slap in the face to us PC gamers.

One small example of this mentality is the removal of the ability to Shift-click or Ctrl-click on stacks of items in your inventory to select the whole stack or a single item respectively. This feature was in Morrowind, but it's missing from Oblivion. Instead we're faced with innumerable confirmation windows every time we want to pick something up or sell it.

It's like running Windows for the first time again, with it assuming we're bloody idiots and need to confirm every action we take.

I have no problem with the Xbox 360 having its own optimised interface, with ridiculously oversized 'TV resolution' text, few hot keys, and one central screen that links to all the character, map and quest information. But for a PC game to not have even configurable hotkeys to bring up the map or inventory individually goes beyond folly. And don't even get me started on the necessity of digging up the hex codes of keys in order to rebind the quick keys in the .ini file.

However, it's not beyond the power of Bethesda to right this situation. What we need is a patch that enables those feature that we take for granted in all PC games: sensible resolution-dependent font sizes, hot keys to jump to specific pages of the interface, more use made of the Ctrl, Alt and Shift keys in the interface, a bigger map window, the ability to disable confirmation windows, the ability to annotate custom map markers, and maybe even a journal into which we can type our own notes.

It's not like PC games interfaces are rocket science, after all.

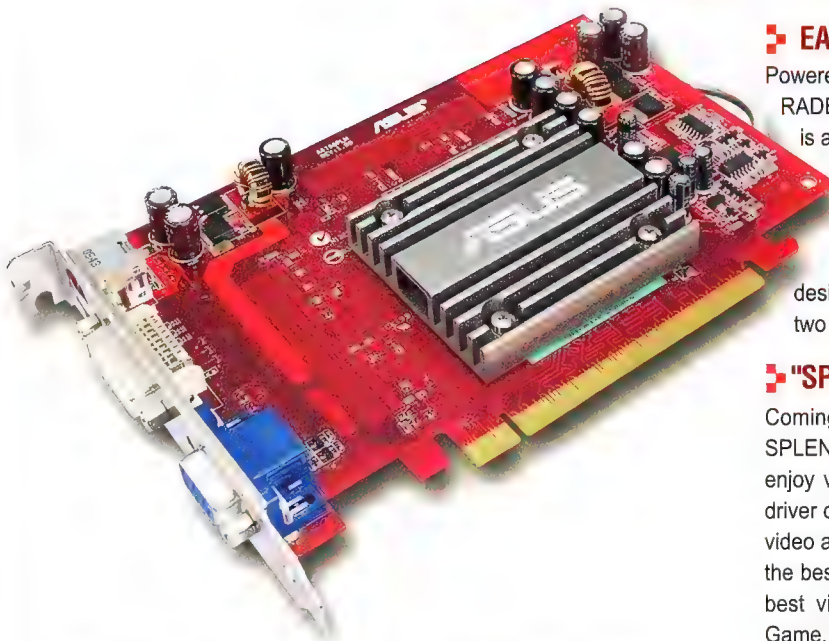
Tim is scared of razors, scissors and midglets.
tim@atomicmpc.com.au



“It's like running Windows for the first time again, with it assuming we're bloody idiots.”

Effective and Noiseless Cooling for High-Performance Graphics Cards is Now a Reality

with the **ASUS ReverseCool Technology**



Hear that irritating buzzing sound when maxing out your graphics card? It's inevitable that fan noise goes hand in hand with high-performance cards. But fret no more! There's a revolutionary technology that harnesses proprietary invention from ASUS, and allows the card to operate at 0dB while keeping the vital GPU cool to sustain maximum capacity at all time.

What is this awesome innovation? It's called ReverseCool, and it is employed specifically on the latest EAX1300PRO SILENT/TD/256M graphics card.

ReverseCool - Fan-less and noiseless cooling technology

The ReverseCool technology relegates the GPU (Graphic processing unit) and heatsink to the backside of the graphics card, placing them directly in the airflow path of the CPU fan to leverage the CPU fan's cooling capability. And the result is no fan on the card, meaning no noisy fan rotation. Ultimately, the extended heatsink maximizes available area to provide larger heat exchange capacity, thus enhancing ventilation in all directions at the same time.

EAX1300PRO SILENT/TD/256M

Powered by the powerful 16-lane PCI Express VPU, ATI RADEON X1300PRO, the EAX1300PRO SILENT/TD/256M is a graphics powerhouse made for visual indulgence.

ASUS engineers have cleverly structured the ReverseCool heatsink on the EAX1300PRO SILENT/TD/256M into a convenient clamshell design, such that the ventilation could be drastically improved. Not only is the card designed with structural brilliance, it is also incorporated with two pretty nice features found only in ASUS solutions.

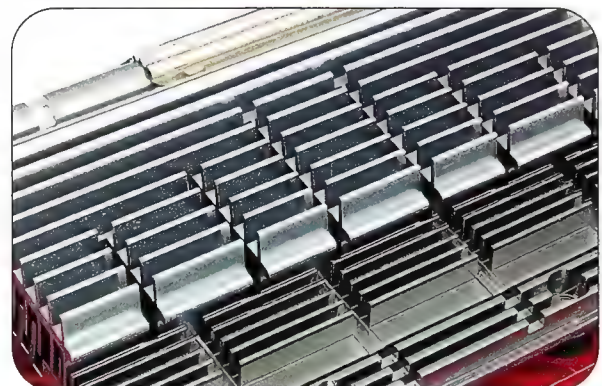
"SPLENDID" visual experience

Coming from ASUS is yet another renowned innovation, SPLENDID Video Intelligence Technology, that allows you to enjoy video quality comparable to the best TVs. Built into the driver of ASUS graphics cards, SPLENDID detects activation of video applications and automatically optimizes image quality for the best visual results. Splendid further provides five modes for best visual results in different video applications (Standard, Game, Theatre, Scenery and Night)

Made for serious gamers

Practice makes perfect, and that holds true in gaming as well. For popular LAN (local area network) party team games such as Counter Strike and Unreal Tournaments, strategy is the key to victory. GameReplay records gaming action into MPEG4 video files so that teams can review all the moves and tactics later on to get better for the next tournament. The recorded files can also be used as screen savers or posted on blogs.

By teaming up powerful graphics processing, unique gaming feature and noiseless yet effective cooling, ASUS has created a video card that gives you peace of mind while running resource-hungry graphics applications.



▲ The proprietary clamshell design leverages CPU fan for GPU heat dissipation.

atomicchat

Talking to the finest human beings on Earth...

Jimmy Wales

Christopher Taylor chats with the founder of Wikipedia and president of the Wikipedia Foundation.

Over 3,000,000 articles – 1,031,000 of them in English, the rest spread across 200 other languages. There are 150 servers worldwide – 104,600 registered users. Five billion hits a month. Since its conception five years ago, Wikipedia has become a cultural phenomenon. With detailed information on everything from the Falkland Islands to German Romanticism merely a search away, its immense popularity is easy to understand. Of course, Wikipedia is not without its share of controversy. The academic world in particular is incredibly cautious of it, refusing to accept it as a credible or reliable source due to the fact that anyone – whether they educated, misinformed or a nasty troll – can edit any of the content as they see fit. Wikipedia is but one arm of the Wikimedia Foundation. The organisation also manages and supports other projects such as Wikinews, Wikitionary, Wikibooks, Wikisource, Wikiquote and the recently launched Wikispecies.

While the Foundation is now simply massive, it all began with one man – Jimmy Wales. Formerly a futures and options trader in Chicago, Jimmy Wales has since become a rallying point for those who believe that information should be free. We recently managed to have a little chat with him about Wikipedia during a break in his busy schedule.

atomic Wikipedia is perhaps the epitome of free information. Was this your original intention?

Jimmy Wales Yes, but it is important to know that we don't just mean 'free as in beer' but 'free as

in speech.' All of our work is placed under a free licence so that others may copy, modify and redistribute it. The goal is to allow people to adapt the information to whatever specific local needs they may have.

atomic What sort of encyclopaedia has huge articles on fictional characters, in-depth looks at obscure sexual fetishes and information on public services that's more detailed than what's available on the relevant government websites?

Jimmy Wales A really big one.



atomic Do you think that news blogs and sites like Wikipedia have become a beacon for people dissatisfied with more 'traditional' sources of information?

Jimmy Wales Yes, I think so. But at the same time, I am not a doomsayer for the traditional outlets. They still have value, and I

think that in the future we will see hybrid models which incorporate the best of the old and the new.

atomic Why do you think that Wikipedia is dragging people away from more 'traditional' sources of information?

Jimmy Wales Because it is free, because it is on the Web, because it better meets their informational needs.

atomic What's the most interesting thing you've ever read on Wikipedia?

Jimmy Wales I've become personally fascinated with the British peerage. To me, I had never expected to have any interest in this topic at all, but the work in Wikipedia is so detailed and wonderful that I find myself reading it for hours and hours.

atomic Do you ever look at some of the

atomicbio

Name Jimmy Dolan Wales
Occupation Founder and president of the Wikimedia Foundation
Websites wikimediafoundation.org

Prior to becoming a futures and options trader, Jimmy Wales was a PhD student of finance at both the University of Alabama and Indiana University. In 1996, he created Bomis, a controversial 'guy-oriented search engine' that sold erotic images.

Four years later he founded Nupedia, Wikipedia's predecessor. While Nupedia also featured an extensive peer review system, the only people able to submit articles were experts. Wikipedia was born 10 months afterwards, the idea being that Nupedia's contributors could use it to get their work up to a reasonable standard before submitting it for review. Surprisingly, Wikipedia ended up rapidly overtaking its parent project in terms of size and popularity, eventually becoming the icon of free speech that we know today.

In order to share the costs associated with running Wikipedia, Wales founded the non-profit Wikimedia Foundation in 2003. As of 2005 it was completely self-sufficient, providing all the funding that Wikipedia and its sibling projects require.

Wales lives with his wife Christine and daughter Kira in St. Petersburg, Florida.

more... questionable content that's submitted to Wikipedia and feel that you've created some sort of hideous monster with a penchant for feet?

Jimmy Wales A penchant for feet! *Laugh*

I am not sure what that means. But yes, sometimes I look at articles on obscure topics and I think to myself that it is a very good thing for the world that someone cares for every little part of it, even things that I can't imagine.

atomic Was it ever your intention to provide a voice for 'alternative' lifestyles and activities?

Jimmy Wales Not particularly. Wikipedia should be a neutral, factual description of the world. I suppose some people find it controversial or at least interesting that this applies to even alternative lifestyles which might normally be condemned or marginalised than simply described.

atomic How do you respond to people who criticise Wikipedia for lacking the



Kurt Jansson, one of the Wikimedia Foundation's presidents, holds up a list of 1000 Wikipedia contributors.

'credibility and authority' of sources like Britannica?

Jimmy Wales Well, the first thing to acknowledge is the extent to which they are right. Of course Wikipedia is a work in progress, and our goal is Britannica-or-better quality, but we are not there yet. We are very respectful of the mission we have chosen for ourselves.

atomic Do you think that it's realistic to expect that you can ever have 'Britannica or better' when anyone can submit and edit articles?

Jimmy Wales Yes, of course! We're already better than Britannica in many areas and we are working on a community review process to even further enhance the quality of our work.



atomic Is the trolling problem really that big?

Jimmy Wales No, not really. Almost everyone, as it turns out, is good. Yes, there are trolls and difficult people, and they do cause some headaches for good people, but overall it seems that people prefer to work together peacefully and productively.

atomic Do you think that people working together to keep the place clean, tidy and as free from misinformation as possible is a realistic future for the Internet as a whole?

Jimmy Wales Sure, why not?

atomic



A man with a vision, Jimmy Wales believes Wikipedia is already better than Britannica in many areas but admits there still more work to be done – the one reason why he doesn't sleep.

atomic What are your thoughts on censorship of the Internet and do you think that it is or will become relevant to Wikipedia?

Jimmy Wales I am against it and it is already an issue. We are blocked in China. Some of our users risk imprisonment to edit Wikipedia. We take these things very seriously.

atomic What do you think of the idea of governments and organisations tampering with Wikipedia articles that portray them in a negative light?

Jimmy Wales Good luck to them with that.

atomic What are some of the things you have planned for Wikipedia in the future?

Jimmy Wales I think that the major changes planned for the future are enhancements to the software to make it easier for active editors to do the things that they are already doing now... streamlining some of the workflow is a top priority.

atomic How much do you personally contribute to Wikipedia?

Jimmy Wales I just recently did my 2000th edit to Wikipedia. This may sound like a lot

to your readers, but it is actually nothing. It is something of a joke in the Wikipedia community that I spend most of my time hanging out in chat rooms and doing email rather than editing. My job is to encourage and support the community, but never forget that they are the ones who do the real work.

atomic Can you tell us a little bit about your side projects like Wikitionary and Wikispecies?

Jimmy Wales We have six major projects now: Wikipedia, Wikitionary, Wikispecies, Wikinews, Wikibooks and Wikisource. Each grew out of social pressure in the community to do some interesting things that didn't exactly fit within the parameters of existing projects.

atomic What sort of person not only comes up with an idea like Wikipedia, but readily takes it on?

Jimmy Wales One that doesn't need a lot of sleep.

atomic What do you do when you're not working on Wikipedia?

Jimmy Wales I sleep.

x-ray

Looking at tech from the inside

The truth about buffering

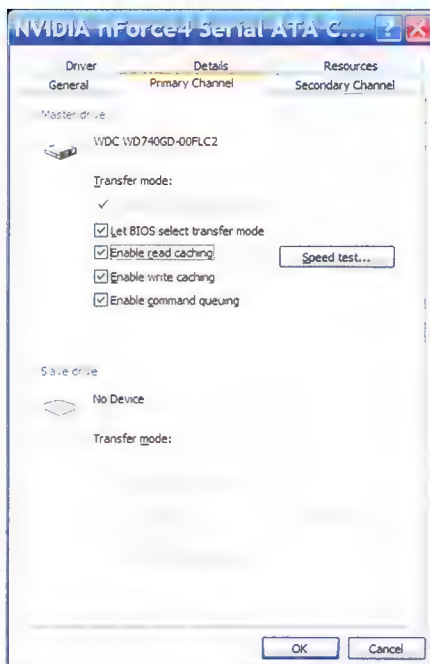
Buffers aren't always better, reveals Ashton Mills.

If you look under the properties for your PATA or SATA controller in Device Manager you'll find, depending on your chipset and drivers, a number of options to control the read and write buffers of your hard drives and, if applicable, command queuing.

By default, drives usually ship with these features pre-configured but, at least with nForce based systems, you can also control the buffers on each drive using the chipset drivers. And they are, usually, all enabled by default.

Drives today have at least 8MB of onboard memory, a size quickly standardising to 16MB, as being able to buffer data going in and out of the drive can boost performance dramatically. Throw in NCQ (Native Command Queuing), which has been hyped up by all drive manufacturers, and the performance feature set of drives beyond raw rpm takes shape.

Or is it? At Atomic we like to question things, and putting the various configurations to the test revealed some interesting results.



NVIDIA's IDE chipset drivers include a basic 'speed test' benchmark in addition to toggling features.

What's in a buffer?

The onboard drive buffer is, like any other cache, used to temporarily store data in transit. Theoretically, the memory can be used to buffer reads so that if the CPU requests the same data, it's already available in the cache. By the same token, when writing the CPU can (through the controller) offload data to drive's cache, and get back to what it was doing quicker. In the case of both read and write buffering being enabled, the onboard memory is shared between them.

In fact, how well a drive uses its on-board memory is a factor of cache management algorithms in the drive's firmware, which are a science in themselves. Suffice to say, efficient use of the cache can actually make the difference between a fast performing drive and a mediocre one.

Which is why it's interesting that the default options for read and write buffers and NCQ are often enabled by default – but is this really the best strategy?

To find out, we ran two drives – a 400GB Seagate Barracuda 7200.8 and a Western Digital 74G Raptor – on an nForce-4 based ASUS A8N-SLI Premium through all possible permutations of the read, write and NCQ settings.

The 7200.8 is a good example of an NCQ supporting 7200RPM drive, while the Raptor is of course a good example of a 10,000rpm drive. Both drives have an 8MB cache, so we'll get to see what impact, if any, faster throughput from a higher RPM has on the cache. Naturally, by disabling NCQ on the Barracuda we'll also get to see the impact of NCQ, with and without cache.

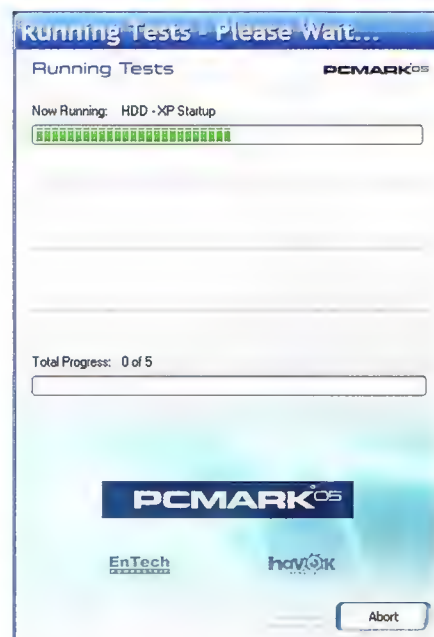
For testing we used PCMark05 for its simulation of different reading and writing loads to test how well the buffers and NCQ fare.

So now, onto the fun stuff!

While it's easy to look at the highest overall PCMark score, keep in mind that this result includes the write scores, which are naturally going to increase when you dedicate the whole buffer to them, bumping up the score even if read speeds get reduced – which just happens to be a very good question. If you dedicate the whole buffer to write caching, do you still get good scores for reads? Going by the results not

just good scores, but even *better* scores!

With writing we can see the only time write speeds are anything above abysmal is when the write cache is enabled, which is to be expected.



PCMark does a good job simulating various desktop loads.

This naturally impacts on General Usage, but oddly also Application Loading, the scores for which are literally halved in any test where write caching is absent.

The XP Startup test shows that NCQ is marginally better than nothing at all, but otherwise NCQ slows read speeds, and causes a significant drop in performance for the read-focused Virus Scan test whenever it is enabled, regardless of cache combination. That said, the advantage of being able to re-order write commands with NCQ clearly shows in the File Write test, with the write cache w/ NCQ scoring far above all other combinations for speed. In fact NCQ alone without buffering scores higher on the File Write than nothing at all. The Virus Scan test is where it gets really interesting. For this read-focused test, the highest score isn't one

that involves the read cache at all. The fastest score is write cache enabled, read cache and NCQ disabled. What could be going on here? Given its just 4MB faster than read cache only, keep in mind the cache is a buffer, and an extra step between drive and CPU. Conceivably, removing this results in faster transfer from disk to host. This is also reflected in the score for no settings at all, which is faster still than any form of read cache and/or NCQ for the Virus Scan. In fact, look closely – NCQ alone is 28MB *slower* than not using NCQ at all.

The Raptor 74GB doesn't support NCQ, but it does support TCQ (Tagged Command Queuing) which, while designed for SCSI and not compatible with NCQ, is nonetheless supported by Windows.

It doesn't really help, however. The results here reflect the same pattern on the Barracuda, with the exception that TCQ doesn't give the same boost to write speeds in the File Write test like we saw with NCQ on the Seagate, but also doesn't cripple read speeds from the Virus Scan test, like NCQ on the Seagate did.

Again, to avoid abysmal write speeds the write cache is essential. And adding a read buffer slows down the read speed of the Virus Scan over no read buffer at all.

So why do we see results like these? If you think of your PC reading and writing data as wanting to get information as soon as it can, and to let go of information as soon as it can, then we can put this into perspective.

For reading the read cache *may* come in useful if the CPU requests data that happens to exist in the buffer, saving time from physically reading it again from the drive, but with the immense throughput speeds we have today averaging 60MB/s, a small 8MB or 16MB buffer (or fraction thereof, when sharing with a write buffer) is going to be emptied pretty quick to make room for the next block of data. Which is why operating systems have their own disk caches which can be far, far larger (a couple

of hundred megabytes or more). This is the better place for the read cache – not only can it actually buffer enough information to be useful, but it's also a step closer for retrieval: main memory compared to the disk subsystem. So in other words, and as revealed in our tests, read caching on the drive doesn't really help at all.

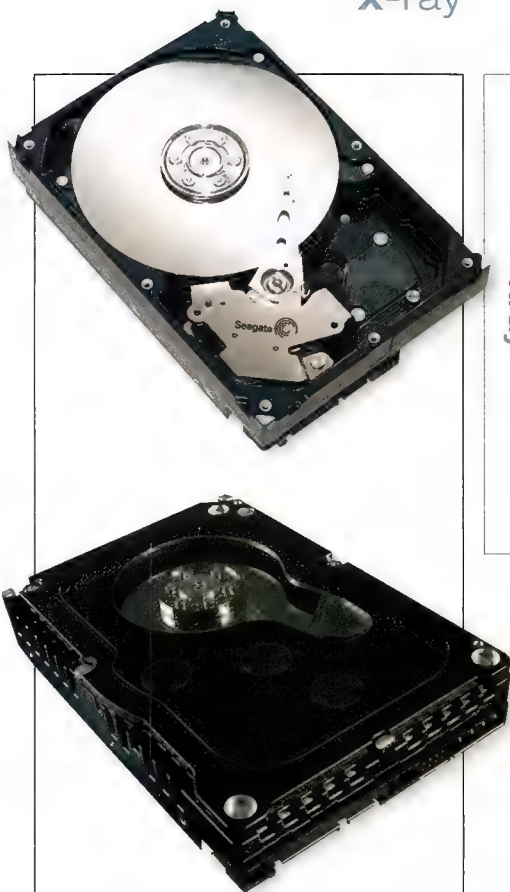
For writing, the CPU wants to let go of information as soon as it can, but it usually can't do this until write requests are completed. This is where, again, the OS disk cache is first stop but once this needs to flush the CPU is still directing write operations, which is where the write cache comes in – the drive can buffer information in the write cache, tell the CPU the job is done and to go back to what it was doing, and then write the data from the cache of its own accord (and, in the case of NCQ, re-ordering commands to optimise writing in relation to the rotation of the disks). This is why a larger write cache has a dramatic impact on write speeds, because for the CPU the write is completed as soon as the data hits the drive's cache, not the platters themselves.

Conclusion

From these two sets of results, we can conclude that NCQ is good for writes, improving them quite dramatically when paired with a write buffer, but adversely affects read speeds on the Barracuda, as seen in the Virus Scan test where *any* combination without NCQ is dramatically faster than with NCQ. We can also conclude that the read cache just appears to get in the way, causing a drop in performance in all tests. Finally, the write cache is essential if you want any semblance of writing speed.

For our two drives, even though from different manufacturers and with different rpms, the best combination of settings is clear: write cache enabled, read cache and NCQ/TCQ disabled.

Check your own setup, and experiment with these options. Keep in mind the efficiency of the caches, and even the implementation of NCQ,



Even though from different manufacturers, the best combo of settings is write cache enabled, read cache and NCQ/TCQ disabled.

can differ between makes and models of drives – but at least we know now not take the defaults in Windows as gospel. If your chipset drivers don't let you play with these settings, also keep in mind most manufacturers release a DOS-based configuration CD image that allows you to set and save parameters like read and write caching to the drive directly, and usually throw in settings for acoustic management too. But that's another story!

Seagate Barracuda - PCMark05

Buffer config	XP Start	App Loading	General Usage	Virus Scan	File Write	PCMarks
R+W+NCQ	8.2	6.3	5.1	47.0	59.8	4505
R+W	8.3	6.5	5.1	78.2	58.7	5007
R+NCQ	4.8	3.4	2.5	51.7	6.9	2059
W+NCQ	8.4	6.4	5.2	52.8	69.8	4660
R	4.2	3.6	2.5	76.0	6.6	2180
W	8.5	6.6	5.1	80.0	58.1	5060
NCQ	4.8	3.4	2.5	50.6	6.9	2053
None	4.3	3.6	2.5	78.9	6.6	2191

Western Digital Raptor - PCMark05

Buffer config	XP Start	App Loading	General Usage	Virus Scan	File Write	PCMarks
R+W+TCQ	12.1	9.0	7.8	81.8	69.1	6531
R+W	10.8	9.5	7.9	88.4	70.2	6591
R+TCQ	7.2	5.7	4.1	82.4	9.0	3157
W+TCQ	12.8	8.9	7.7	86.8	69.2	6601
R	7.0	5.6	4.0	87.8	9.0	3156
W	11.4	9.6	8.0	92.5	70.1	6716
TCQ	7.2	5.7	4.1	84.5	9.0	3171
None	7.0	5.7	4.0	90.9	9.0	3187

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hardcore

News, reviews and round ups on the latest hardware technology for your box



Before I go into the obligatory spiel about the hardware we included this month, I feel the need to tell you about my experience with the retail Xbox 360, as I'm sure one of you was still on the fence about it. Let's begin by saying it wasn't quite what I expected.

After picking up the premium pack, it was straight home and on to the projector. Using a local gamer, I'd managed to budge almost every major title on the market, and I was in seventh heaven. Sure, the plug and play charge kit for the wireless controllers was a bit silly, not working when the Xbox was turned on. The fact that it sounded like a fleet of Black Hawk helicopters reverberating through a valley was probably the biggest issue – it makes retail PCs sound like a mosquito humming. But it was only when I tried up Project Gotham Racing 3 that things took a decidedly weird turn. Thinking that I'd stumbled upon the hidden USB mode, it took me a few minutes to realize that the mass of flashing polygons wasn't meant to be there. Several days of fruitless online determined the cause of my woes – an overheating console. It wasn't the way I'd imagined it – it was just a copy cat.

A quick run to the shops and I'm now on my second 360. So far Forza has run perfectly, but I do witness the steam

emerge after an extended lap of Ghost Recon. Warning: it also crashes every couple of days, but I've been reassured that these are unusual buggy software issues, but we're used to this, it's Microsoft after all.

I've just spent 252 words bugging out the 360, but the following two should sum up how I feel about it. 360 – "orgasm"! It makes such a nice change to sit on the couch playing and still be presented with visuals that are almost up to scratch with my PC, and in some cases even better. Halo is simply amazing. Kameo looks beautiful, and Fight Night Round 3 is great for whuppin' my girlfriend after an argument. Sure, it's more like a PC than any console in the past, right down to its overheating and crashing issues, but I'm in love. Now if only there were some more damn games.

Oops, I've spent the entire wrap space talking about 360 instead of the products reviewed in this section, which happens to be a lot this month. Thank god for that. We've covered the just on the right. Do read!

Bennett needs more people to whup on his Xbox.

bennett@pathmag.com.au



this month



▲ Tech Trends

News for the little tech gerbil inside us all. Yes, you too!



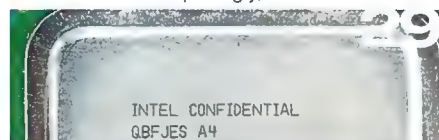
▲ Ground Zero

Dan Rutter tries to come to terms with a computer-generated future.



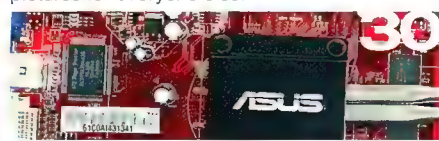
▲ Gearbox

If there was a section in the magazine for gear, this would be it. Surprisingly, it is.



▲ How we tested

Testing methods for the number freaks. Pretty pictures for everyone else.



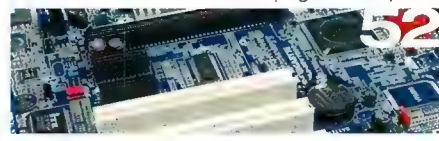
▲ Framerate

Where there's an unbenchmarked card, there's Framerate. Graphs to help you buy stuff.



▲ Head to Head

So many 7900s! We make it easy by telling you which card is best in this five-page roundup!



▲ Kitlog

Buyer's guide for the computer elite. That's you!

hardcore reviews

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short circuits

In the never-ending format wars that we increasingly don't care about, TDK has announced that it is developing quad and octal layer Blu-ray discs, capable of holding 100 and 200GB respectively. Can we settle on a standard first, please?

The Xbox 360 hacking scene continues, with Transcode360 (an application that allows transcoding of unsupported video formats into MPEG2 on the fly so the Xbox can stream them) receiving an update, Datel releasing a product that allows you to hook a 360 up to your PC hard drive for storage, and Team Avalaunch releasing a SATA adaptor allowing you to connect the 360 HDD to your PC without removing it from your Xbox.

Still on the 360, Paramount has agreed to allow downloading of its content over Xbox Live in high definition. At this stage it seems to be just trailers, but hints at an exciting future for the Xbox being the digital content delivery mechanism of the future.

ATI has renamed its Xpress 200 boards to Xpress 1600, to match the naming scheme of the new 3200 – representing the number of lanes available to the PCIe slots. Well, multiplied by 100 anyway – so don't think there's a new product on the shelves. Marketing wins again – bigger numbers are always more impressive, right?

Liteon is now manufacturing BenQ's optical drives, giving it an estimated 27 percent of the market and placing the company firmly as the #2 supplier behind Hitachi LG Data Storage. This could change quickly though, with the new Sony/NEC Optiarc group naming Liteon as its manufacturer, giving Liteon the potential to become number one in a very big way.

Seagate has released its first 3.5" perpendicular drive, the Cheetah 15K.5, following on from their Momentus laptop drive earlier this year. The 15,000rpm SCSI drive will satiate enterprise users, desktop users can expect their perpendicular drives to arrive sometime in our winter.

tech

Quenching your thirst for the latest technology and hardware happenings.



2007 is going to be a very interesting year. For a start, quad core is coming for the CPU. And unless some major breakthrough appears in processor technology soon, there'll likely be even more cores following, with multi-core no longer being the stop-gap technology it was suspected to be. At least until *Star Trek* style nanoprocessor technology hits, anyway.

While Intel seems to be pushing hard to get something out the door before the end of the year, it's still slated for Q1/07, with AMD expected to launch around the same time with its four-core part.

Kentsfield, Clovertown and Tigerton are the codenames for Intel's respective 65nm home CPU, server (four CPU optimised) and high end server (eight CPUs and above) components, however rather than being a true quad core solution, they are two dual core dies attached to the CPU, creating a potential bottleneck between the cores.

Less is known about AMD's plan at this stage, the codename simply being K8L, with the cores connected via a revised Hypertransport bus and the chip slotting into the existing AM2 socket, in much the same way that 939 happily supported the X2 series. There are some murmurs about DDR3 support, however AMD's roadmap shows that gem as a 2008 solution – for now AM2 is a

DDR2 only platform.

Unlike Intel's solution, AMD is expected to have all the cores on one die, making data transactions between them faster than Intel's split solution. The server version of AMD's quad core baby will also be burdened with an extra level of cache to help deal with coordinating data in systems above eight processors in size. Both companies have reported success with scaling up to 32 cores.

All this is fine, except for the fact that we're still reasonably starved for multi-threaded software. Applications such as video and audio encoders seem to be making the quickest transition over (although 3D programs were there long, long ago), and Vista should give the home market quite the kick in the pants (not to mention force mainstream 64-bit support) – although let's face it – games are where we want the performance, and also seem to be moving at a molasses-slow rate in terms of handling multiple threads.

Here's the rub – now we've reached four cores and there's a vision for more, there's no hard and fast rules saying that all the cores have to be identical in build and function. Each core could easily have a very specific function to carry out, rather than just load balancing.

All this is set to happen about the time AGEIA's wonderful dedicated physics card

should hit decent market penetration, with its hardware accelerated PhysX engine making all your Newtonian dynamics dreams come true (look out for our hands-on take Real Soon Now).

And this brings about an interesting conundrum. On the one hand there's a very specific piece of hardware that costs US\$250, entirely dedicated to accelerating your physics, potentially creating a whole new set of balance issues between the CPU, GPU and itself, as well as overall driving up the price of your system.

On the other, a generic processor with cores to burn, all clocked at or above 3GHz. Suddenly you have one core running general data, the second purely feeding the visuals to the graphics cards, the third handling AI and the fourth physics. Or even multiple cores handling the physics – indeed word has it that AMD is working on a 'reverse hyperthreading', that allows them to run a single thread across multiple cores.

Preliminary information suggests a single core in its current state wouldn't be able to keep up with AGEIA's optimised wundercard, however physics on CPU would be bonus provided at no extra cost or space, versus an add in card with potentially a lot of teething problems. There's even talk of moving to a dual socket solution so double the bandwidth is available to multiple video card solutions, creating quite a complex dance of data delivery.

Of course speaking of video, the more obvious (and likely) threat to AGEIA is the graphics card companies, with talk of offering rudimentary physics using competitor Havok's physics engine to fling bits around, albeit requiring a dual card setup and at the detriment of graphics performance. The advantage of this is many games already use the Havok engine in software, and thus should receive a speed increase on supported hardware.

It surely can't be too long, however, before the

graphics companies stop talking performance degradation and start talking dedicated physics units. One thing is certain – with a dual card graphics solution, a physics card, a sound card and whatever other add in boards you may have, the motherboard sure is going to get crowded in the next few years.

Some have argued AGEIA's biggest chance of success isn't the PC market, but the console market, where there are no worries about compatibility, standards, adoption rates, or at this stage, competitors.

Sony has already provided an AGEIA PhysX SDK to PS3 developers as part of its standard development kit, an optimised PhysX being used in cooperation with the Cell processor. While AGEIA's hardware is not in there, it hopes that the adoption of its software will eventually drive developers to use its platform for all games, and hence cause a run on effect to the PC and AGEIA's hardware. Unfortunately at this stage, this is mostly speculation – there's no way to tell the direction the industry will travel – developers certainly seem to have a great interest in AGEIA's product, the tech demos (especially the latest Cell Factor demo)

are very impressive, however there's a general feeling in the industry that it's a second 3dfx in the making – it'll be the birth of an industry, but competitors will be ruthless.

NVIDIA and ATI will want a piece of the pie, other physics companies will probably rise with competing standards, and just like the early 3D days it will probably take Microsoft to provide an API in DirectX 11 or 12 to force developers to use one specific physics engine.

For now though, AGEIA holds all the cards and seems to have dug in well to weather any potential storms, however the CPU and GPU world are definitely regrouping for a counter attack.

2007 is going to be a very interesting year.

short circuits

ThePCSpy.com has hit upon a brilliant way of separating intelligent Web bots from humans – KittenAuth. KittenAuth displays nine images, requiring the user to click on three kittens to go a step further, something machines can not yet differentiate from other animals. Check out www.kittenauth.com/ka.php for the cutest security test.

If you're caught with a pirated version of Windows Vista, it's not just updates you'll be locked out from now. Microsoft has revealed that those with illegitimate copies will have the aero theme disabled, forcing them to use an unaccelerated desktop with all the dependent features disabled.

Support and updates for Windows 98, 98SE and the abomination known as ME will be terminated as of July 11, 2006, in a push to move those last stragglers onto a more secure platform. Online support should still be available.

HOT OR NOT

Your monthly guide to fashions and faux pas in the tech industry.

Digital media

Wake up and smell the downloads.

Oblivion

We can't stop playing.

Family Guy

Oh Peter.

Parallels Workstations

Virtualisation... yum.

Arcade machines

Retro goodness.

Physical media

Blu-ray? More like Who-ray.

Oblivion

If we're dead, we can't play Oblivion.

Family Time

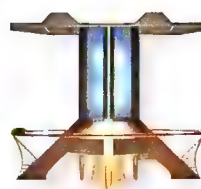
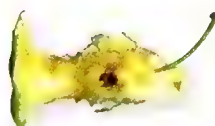
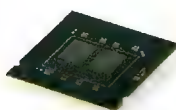
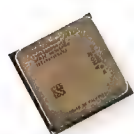
Equals less PC time.

Boot Camp

What is your major malfunction?

Consoles

Games without soul.



The different types of cores known to man. There's no hard and fast rules saying all cores have to be identical in build and function.

groundzero

Technology from
the front lines

The Synthetics are coming

Daniel Rutter welcomes
our new computer-
generated overlords.



Image courtesy of Twentieth Century Fox

Some people are wondering whether computer-generated actors will ever replace real people in the movies and on TV. Some people are saying they never will.

To my mind, this sounds like the people who wondered whether heavier-than-air flight would ever be good for anything – or, a bit earlier, possible.

We are, I remind you, already living in the crazy sci-fi future. The CGI in *The Last Starfighter* can, of course, now all be done on a desktop box.

More relevantly, people watching *Starfighter* at the movies in 1984 probably would have considered it mere sci-fi gibberish if someone in the movie referred to a problem with 'overly shiny cube maps on ATI hardware'. Today, that's a routine HL2 bugfix.

And yet we still pay temperamental people lots of money to prance around in front of cameras with make up on.

Backgrounds and effects are becoming more and more digital, creating weird hybrids like *Sky Captain and the World of Tomorrow* and the *Star Wars* prequels. People have

complained about the crummy acting you get when people have to perform in places that don't exist and with props that aren't really there, but if Patrick Stewart can respond believably to an X on a stick that represents the Borg cube on his viewscreen, I reckon people paid 20 times as much can probably figure this stuff out.

They'd better, or their lunches are, most certainly, going to be eaten by synthetic actors.

Philosophers can – and do – yammer on for years about the significance of real people representing quasi-real people with the help of a team of other unseen, but real, people schooled in the tricks needed to make fake things look realer than real. It makes your head spin to think about it.

Won't it be so much simpler when it's all straightforwardly synthetic?

People's objections to these ideas seem to me to be the same sort of irrational emotional attachments that people have to other obsolete technologies. Vinyl records, film photography (okay, okay, that

isn't quite obsolete), steam trains; they all have their charms, go ahead and enjoy them if that's your thing. But don't insist that because the new tech isn't quite there yet, it never will be.

Computer-generated actors at the moment can be affecting and emotive (I saw you crying at the end of *Monsters Inc*, don't try to deny it), as long as they're not trying to look like people. Computer generated humans are, at the moment, right down there in Uncanny Valley – the part of the realism-versus-emotional-response graph where something's human-ish enough to trip our people-detecting

circuits, but not realistic enough.

At the moment, the only way out of the Valley is by using human puppeteers to keyframe-animate your computerised characters, as was done by Andy Serkis in his digital Gollum suit.

If you think there's no way for wholly digital actors to move their bodies and faces like Sean Connery or Judi Dench, though (Clint Eastwood might be an easy starting point for the facial animators), I think you're in the same boat as all of the people who confidently predicted that computer chess programs would never beat human grand masters.

Some of them kept predicting it right up until Garry Kasparov lost in 1996.

Later, Kasparov commented on how human Deep Blue's strategy seemed. Not at all the undirected flurry he'd seen from previous basically-brute-force computer opponents. Deep Blue was still the same kind of program, though. It just had faster hardware. A really big quantitative difference looked just like a qualitative one.

I see no reason not to think that the same will happen in the movie world.

It's not as if the money isn't there, after all. Rob Schneider's salary would buy a lot of processor cycles. And the sooner it does, the better.

Dan takes photos of himself at night.

dan@atomicmpc.com.au



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▲ Gear4 Pocket Party

Supplier Disruptive Technology
Website www.gear4.com Price \$69

Have you ever turned up to a party with your iPod and there's been no music? How crap could the hosts be? Never mind, that's what this handy device is for. You can just stroll into the centre of the room all swank-like, plug this baby into the bottom of your iPod with one, smooth motion, plonk it down and start grooving to the sounds of Youth Group and Travis. Yeah, you know how it is.

A.C. Ryan ▶
Blackmagic2
UV Paint

Supplier PC Case Gear
Website www.pccasegear.com.au
Price \$9.90

If your parts simply don't glow enough (no, not those parts, although that'd be fun), you can apply this 30ml bottle of UV paint liberally, shine a black light and watch your world light up. You don't have to stick with the bog standard blue either. Orange and green are also available should your case's colour scheme require it.



Antec Tricool Fan ▶

Supplier Altech
Website www.altech.com.au Price \$10-\$40

This isn't just another case fan – the Tri-Cool series are so named because they sport three speed levels and, in this new LED version, three coloured LEDs to add bling to your box. The Tri-Cools are actually pretty good fans, and come standard with other Antec products like its popular P180 case. The speed throttle is on a short leash, so it's for internal use only, but allows you to set three speeds on the 120mm version: 1200, 1600, and 2000rpm. For the 80mm, it's 1500, 2000, and 2500rpm. Despite the speeds, the fans are also very quiet. If you need some new case fans, the Tri-Cools are good.



▲ Gear4 LeatherJacket

Supplier Disruptive Technology
Website www.gear4.com Price \$TBC

Oh no! These guys have stolen the name of a fish – a fish, dear friends – and used it to sell this product! Sure, it covers up your iPod like a set of scales (leather ones) and sure, it gives your iPod some protection from water, much like a fish. But heck, think of our squishy aquatic relatives. Not that fish are actually related to humans, unless you want to get all primordial. If you're not that interested in the primordial, fish, or anything else we plan to blather about, these jackets are actually quite trendy. But not very fish-like.



▲ Steelpad 5L

Supplier **PC Case Gear** Website www.pccasegear.com.au Price **\$65**

It's a mouse pad, you can see that. What you can't see is how enormous it is, and how smelly the super-grip rubber base is. We're not talking new car smell here, more mouldy banana monkey faeces smell. And despite its name, the 'Steel Pad' has no actual steel in it. It's more a piece of wet suit slapped onto some acrylic with a cloth cover. The surface is really quite coarse, however, if you can stand the smell and the roughness, it's not horrible.

CaseArts Evil Sight

Supplier **PC Case Gear**
Website www.pccasegear.com.au
Price **\$12**

Following hot on the heels of the gothic thumbscrews, this nasty piece of work's unearthly glow is powered by lost souls trapped in the ether, or failing that your power or HDD LED headers on your motherboard.



▲ CoolIT Chiller

Supplier **PC Case Gear**
Website www.pccasegear.com
Price **\$75**

This really is as good as it gets – a personal USB powered drink chiller, for the esteemed geek who has it all. Now you can code, game, surf and reach for a cold one without ever leaving your uber chair. While nifty in thought, in reality the peltier powered base takes a while to chill a tall standing can, but leave it long enough and it'll get the job done. Seriously cool! Yes, we said it.



Xitel HiFi-Link

Supplier **Audiobits**
Website www.audiobits.com.au
Price **\$149.00**

As you know by now, we've covered a lot of cool gear in this issue. But we haven't yet mentioned the Xitel HiFi-Link. This is a USB powered digital-to-analogue converter (DAC) that takes digital audio from your computer or iPod and outputs it to a pair of speakers or headphones. It's a great way to get better sound from your digital sources, and it's also a great way to get better sound from your analog sources. The Xitel HiFi-Link is a great piece of gear for anyone who wants to get the most out of their digital audio. It's a great piece of gear for anyone who wants to get the most out of their analog audio. The Xitel HiFi-Link is a great piece of gear for anyone who wants to get the most out of their digital audio. It's a great piece of gear for anyone who wants to get the most out of their analog audio. The Xitel HiFi-Link is a great piece of gear for anyone who wants to get the most out of their digital audio. It's a great piece of gear for anyone who wants to get the most out of their analog audio.



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2.1



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benchmark

How we test, what we test, when we test it

Benchmark. It's an odd word. It brings with it visions of a carpenter, hunched over, worn with the effects of his trade and age, focused on a single spot, etching a small indentation precisely into his workbench. A measurement of perhaps how long something was, or how deep something would cut – and hence how it stacked up, or performed compared to other somethings.

Fast forward to today, and it's the same thing, just with software, thermal goop and probably just as many sliced fingers.

3DMark05 and 06 are the legs of our bench, as freely downloadable tools they allow people all around the world to compete on a single platform, regardless of its indication of real world application, and keeping our table stable.

On the gaming surface, Call of Duty 2 takes first honours in the FPS department. Quake 4 follows closely behind for our OpenGL benchmarks, taking over from where the venerable Doom 3 left off and offering multiple CPU optimisations. Half-Life 2 remains, its market penetration simply too huge to ignore. X3: Reunion makes an appearance, in an effort to have a benchmark that is not an FPS. In the same line, Splinter Cell: Chaos Theory has also been added. Other games do exist. Honest.

All these tests are run at 1280x1024, 1600x1200 and 1920x1200 with vsync off, to cater for the most popular TFT resolution, CRT resolution and those who own widescreen monsters respectively.

To hit the CPU, we use LAME MT, a multi-threaded version of the popular MP3 encoder, which is used to compress a standard 30 minute WAV file. Similarly, VirtualDubMod is used to compress a standard 1GB raw video file into XviD at 1300kbps. Other CPU specific tests in our stable are Maxon's CineBench and SuperPi Mod. Rounding out the suite, SiSoftware's Sandra tests several subsystems across the board, while HDTach and ATTO Disk Benchmark helpfully provide hard drive scores.

All these tests are run on a Windows XP SP2 platform, running the latest official drivers available. Every test is run three times to eliminate any oddities that may crop up along the way, the final result printed in the magazine being an average of those scores.

Of course, all this is pointless without a standard set of hardware, and as such it is laid out below for the world to see. On with the testing!

BENCHMARKS

Graphics

3DMark05
Game tests only, 4xAA, 8xAF
www.futuremark.com

3DMark06
Game tests only, 4xAA, 8xAF (SM2.0), 8xAF (HDR/SM3.0)
www.futuremark.com

Half-Life 2
Canals custom timedemo, 4xAA, 8xAF, all details highest, HDR off
www.half-life2.com

Splinter Cell: Chaos Theory
Lighthouse Demo, Shader Model 3.0, 8xAF, shadow resolution high, all features on
www.splintercell3.com

X3 Rolling Demo
High settings, auto quality control disabled, glow enabled, 4xAA, 8xAF
www.egosoft.com/games/x3/info_en.php

Call of Duty 2
Hill 400 – Defend custom timedemo, 4xAA, 8xAF, all options highest
www.callofduty2.com

Quake 4
High quality, 4xAA, 8xAF, Multiple CPU support, all options highest
www.quake4game.com

Subsystems

HDTach
www.simplissoftware.com

LAME MT
softlab.technion.ac.il/project/LAME/html/lame.html

VirtualDubMod
virtualdubmod.sf.net

SuperPi Mod
www.xtremesystems.com/pi

Cinebench
www.cinebench.com

SiSoft Sandra
www.sissoftware.co.uk

Everest
www.lavalys.com

Others

DisplayMate
www.displaymate.com


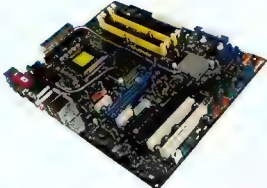




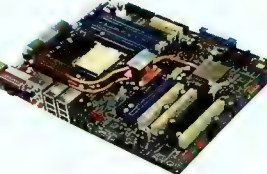



ATI Tool www.techpowerup.com/atiutil

RivaTuner
www.guru3d.com/rivatuner

Nero CD Speed
www.cdspeed2000.com

CPU-Z www.cpuid.com

Stress Prime 2004
sp2004.fre3.com

ATOMICBENCH			PC Case Gear	
 <p>▲ Intel Pentium 955 EE</p>	 <p>▲ ASUS P5N32-SLI Deluxe</p>	 <p>▲ 2GB OCZ PC2-4200EB</p>	 <p>▲ Western Digital 1500ADFD</p>	 <p>▲ Seasonic S12 600W</p>
 <p>▲ AMD Athlon 64 FX-60</p>	 <p>▲ ASUS A8N32-SLI Deluxe</p>	 <p>▲ 2GB OCZ PC-4000EB</p>	 <p>▲ Dell 2405FPW</p>	 <p>▲ MSI 7800GT</p>

frame rate

Benchmarking video cards since forever.

framerate

**Sapphire
X1600XT**

GPU **ATI RADEON X1600XT**
 Memory size **256MB**
 Core clock **590MHz**
 Effective memory clock **1380MHz**
 Memory type **128-bit GDDR3**
 Pixel processors **12**
 Vertex processors **5**
 Video out **DVI; D-Sub; component;**
composite; S-Video
 Video in **None**
 Price **\$299**
 Supplier **Sapphire/Achieva**
 Website **www.sapphiretech.com**

The X1600XT is ATI's mid range card, coming in at the magical \$300 mark – half as costly as its bigger X1800XT brother, and one third that of the flagship X1900XTX – and consequently in a lot more homes. Giving NVIDIA's 7600GT (which is in the same weight class) a firm spanking, the X1600XT covers the average user's needs nicely. A big bonus is there's no need for extra power to be hooked in, the PCI-E slot providing all it needs, either freeing up a molex connector or removing the need for PCI-E power plugs altogether. Magical.

**XpertVision
GeForce 7600GT**

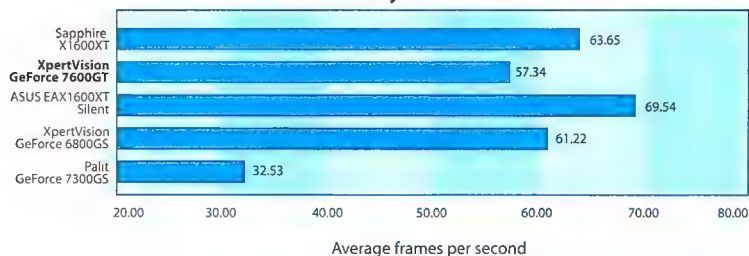
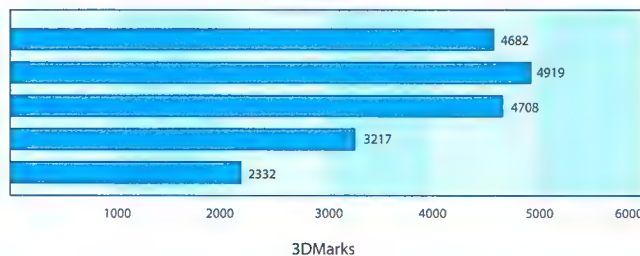
GPU **NVIDIA GeForce 7600GT**
 Memory size **256MB**
 Core clock **575MHz**
 Effective memory clock **1500MHz**
 Memory type **128-bit GDDR3**
 Pixel processors **12**
 Vertex processors **5**
 Video out **DVI; D-Sub; S-Video;**
composite; component
 Price **\$379**
 Supplier **Altech**
 Website **www.altech.com.au**

The latest in the mid-range arena of NVIDIA's GeForce 7 line-up, the 7600GT is an SLI-capable card for the masses. It runs up a winner in terms of synthetic speed under 3DMark05, however in the real world it takes a plummeting fall against the *cheaper* X1600XT. Differences in architecture aside, the main performance dropper is likely to be the halved memory interface, sitting at 128-bit. As a complement to the onboard PureVideo, it has every output one might ask for. Being a reasonably quiet performer, it is a nefarious mainstream pixel pusher.

**ASUS
EAX1600XT Silencer**

GPU **ATI RADEON X1600XT**
 Memory size **256MB**
 Core clock **587MHz**
 Effective memory clock **1386MHz**
 Memory type **128-bit GDDR3**
 Pixel processors **12**
 Vertex processors **5**
 Video out **DVI; D-Sub; S-video;**
composite
 Video IN **S-video; composite**
 Price **\$349**
 Supplier **ASUS**
 Website **www.asus.com.au**

As ATI's new mid range card, ASUS saw the opportunity and took it -- barn, another kinda-fan-free cooling solution. It copes fine with case fans; however we have concerns with the structural integrity of the extended heatsink. If travelling is your thing, we'd suggest packing up this affordably feisty card before doing so. In terms of performance, it doesn't do a bad job in remaining reasonably close to the X1800. You could easily run two of these in Crossfire mode for an extra bit of juice – just make sure you have plenty of case ventilation.

Far Cry - 1280 x 1024**3DMark05**

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RAVE REVIEWS

cont.

Aug. 26, 2005

"Absolutely exceptional memory capable of lower latency timings at stock speeds and still pull through with a jaw dropping overclock to boot."

tweaknews.com

Aug. 31, 2005

"In our tests, the PQI3200-1024DBUs turned out terrific performance along with impressive overclocking results....to top it off they're priced to sell!"

hothardware.com



THE ULTIMATE MEMORY FOR hardcore GAMERS



7900 GTX

The name of the game is speed, and when it comes to the 7900 there's plenty to spare. Craig Simms and Ashton Mills don their 'speed freak' T-shirts and round up the best.



We've been inundated with GeForce 7900 series cards in the labs here the last few months, so much so we even built a cubby house out of the boxes, and formed a mini-labs inside it to test all the cards in, because we're crazy like that. We got odd looks from all the girls in the office, but we know that they're just jealous. Seriously, you're swimming in a pile of some of the fastest cards on Earth, who wouldn't become a victim of the green-eyed monkey beast?

The interesting thing about this collection of super-cards is that, as the latest flagship product from NVIDIA, every man and his dog and his best friend's mother's alien adoptee are pushing them onto the market. Especially the 7900 GTXs, because they're top of the heap.

But if you were to strip away the stickers that adorn these cards, you'd have a hard time telling which company released which card. To say all of these cards are identical is an understatement of gargantuan proportions. Sort of like saying Angelina Jolie is just a little bit fit, or that Bill is only somewhat fond of the amber liquid. All we can conclude from this is that apparently time to market is more important than innovation these days.

So it's mildly pleasing to discover that, even if the boards are identical right down to their cute little capacitors, their BIOSes have at least received some unique loving treatment, especially with regards to overclocking. Though even this is infused with a twist of irony – as clock rates are about the only way these cards can distinguish themselves, it's not the least bit amusing that the 7900, while operating much faster due to the 65nm process, is nonetheless pretty much at its ceiling at the stock clocks. There's already been a level of backlash from 7900GTX cards crashing for early adopters since they first hit the shelves, a problem NVIDIA has since confirmed and now corrected for all chips being shipped to partners.

So you can imagine how uneventful our testing turned out to be – all the cards are essentially identical at the hardware level, and feature similar clocks or mild overclocks. This doesn't, for one moment, detract

from the fact that these are the fastest NVIDIA cards money can buy at the moment, and they absolutely scream for performance when it comes to games, but what it does mean is that the biggest differentiator between them all is price, and what's in the box.

And on that note, when you read the following pages, ask yourself – is it worth paying extra for a factory overclocked card when you could save yourself some money on a stock card, and overclock it yourself? Granted, there's no warranty for that speed, but you'd have to be an ape in pyjamas to kill your card through overclocking these days. And with

little ceiling on the chips, you can very likely reach the mild overclocks on some of the cards you see here yourself.

On the other hand, a quick play with a local price search engine will often reveal overclocked versions being sold at the same price as the vanillas, and a guaranteed speed increase is always nice – so as they say, shop around.

Under the hood

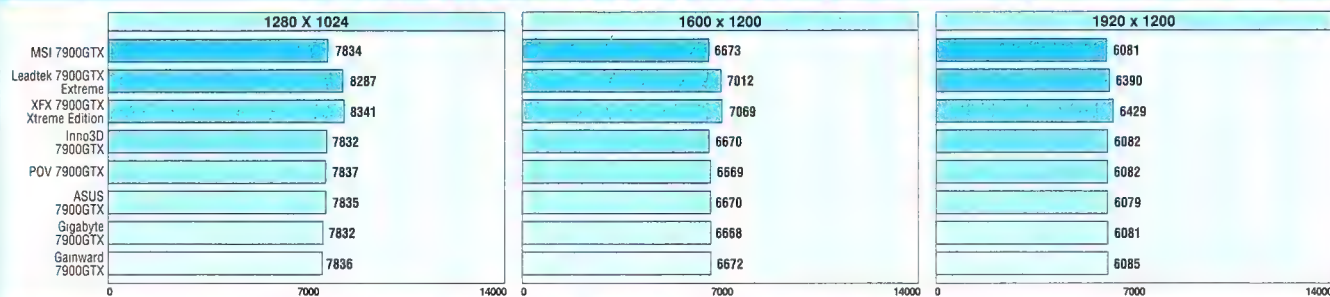
Appearance wise, nothing has noticeably changed from the 7800GTX 512 to the 7900GTX. Open up the 512MB video card roundup in *Atomic 62* and at first glance you'll probably think we've printed the same article twice. However, under the hood lies NVIDIA's current flagship, a 65nm core that is essentially a 7800 capable of higher clocks. Which is never something to snuff at. That, and the stock memory size of 512MB which, though rarely taken advantage at the moment in games, does at least future-proof

the card for upcoming titles. So if you're an NVIDIA fan boi and you're looking for the fastest card to play Oblivion with at the moment, one of these babies is definitely for you.

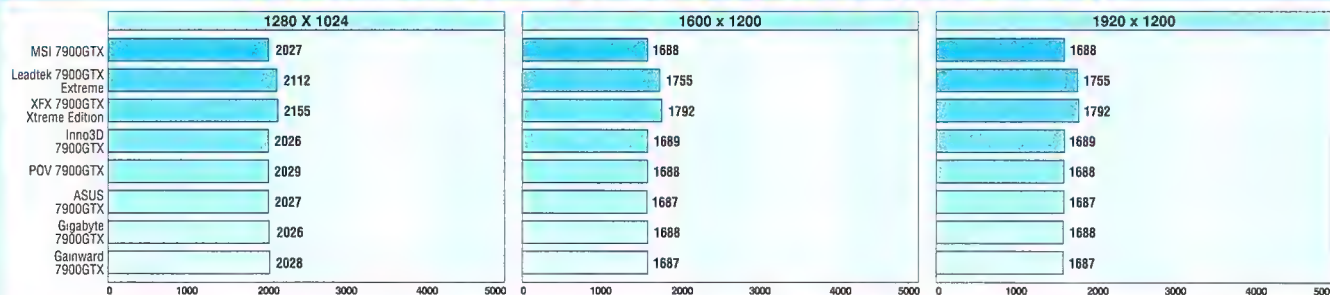
All benchmarks on the coming pages were performed using NVIDIA's ForceWare 84.21 driver in the AMD standard test bench (see *page 29*) with a suite of synthetic and real-world tests for your lovin'. Swan Lake was then performed by Ashton, of which we shall never speak of again, but may leak videos on the site later (WTF – Ed).

“What it does mean is that the biggest differentiator between them all is price, and what's in the box...”

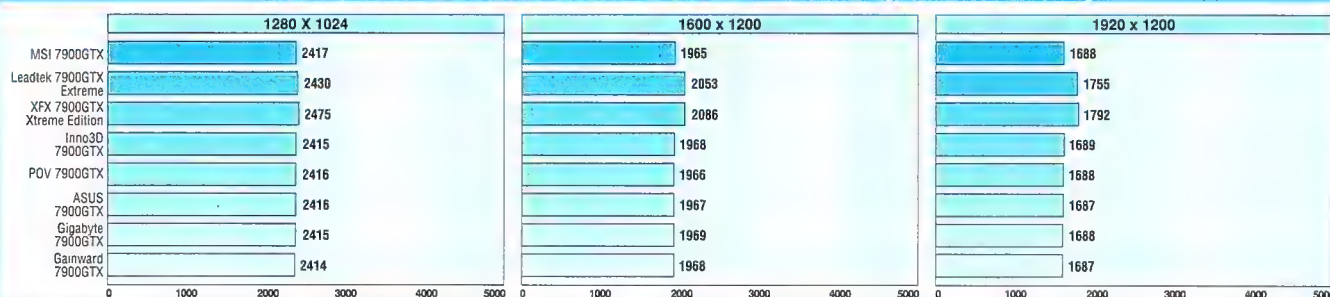
3DMark05 - 4xAA, 8xAF (3DMarks)



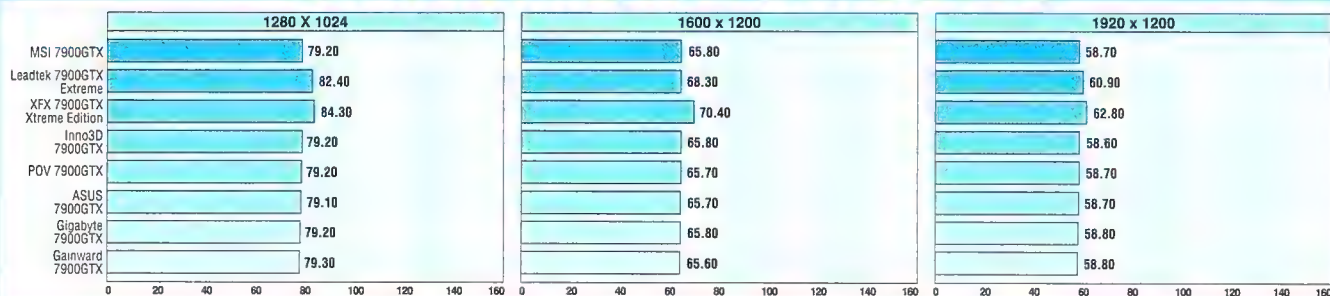
3DMark06 SM2.0 - 4xAA, 8xAF (3DMarks)



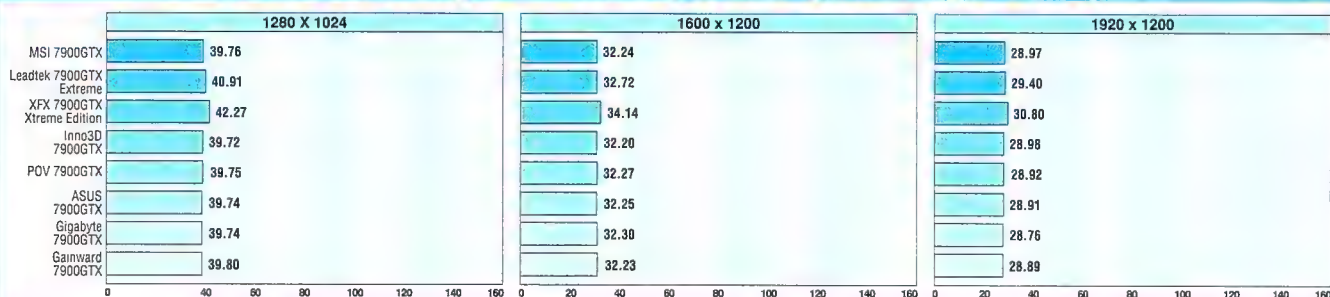
3DMark06 HDR/SM3.0 - 8xAF (3DMarks)



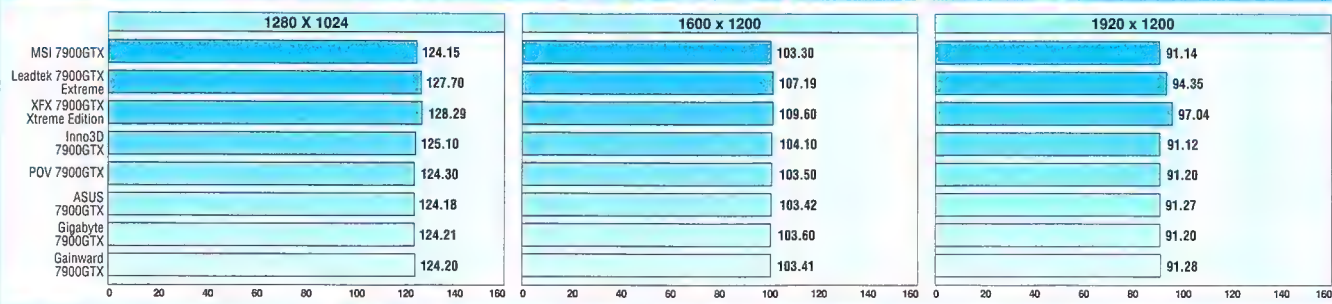
Quake 4 - 4xAA, 8xAF (average FPS)



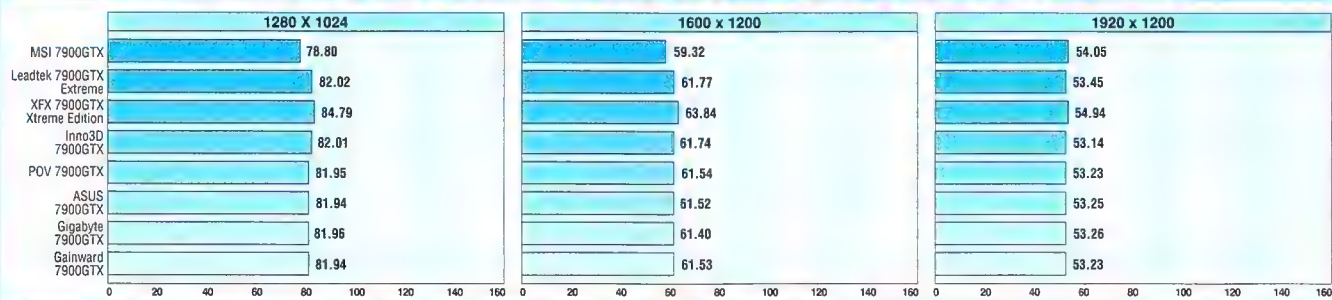
Call of Duty 2 - 4xAA, 8xAF (average FPS)



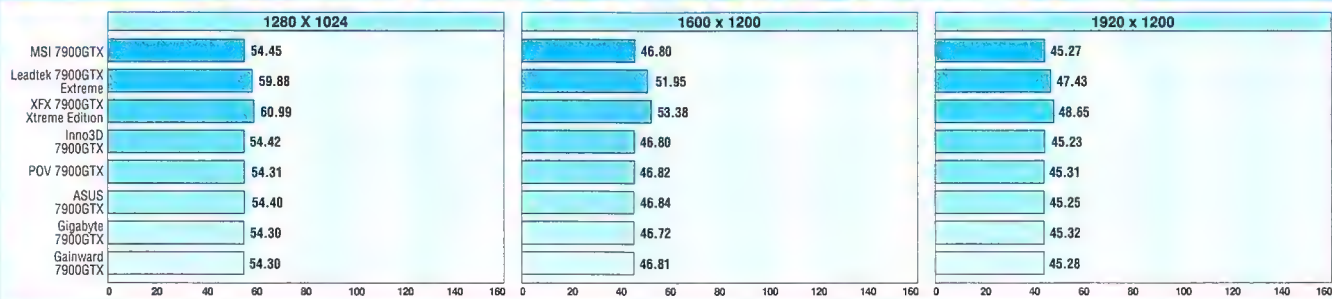
Half-Life 2 - 4xAA, 8xAF (average FPS)



Splinter Cell: Chaos Theory - 8xAF (average FPS)



X3: Rolling Demo - 4xAA, 8xAF (average FPS)



Results analysis

Truth be told, we locked Craig in labs during these tests with a time-release mechanism. Not even Lassie, Macgyver and a case of TNT could break into labs with this mechanism on. At the time, we told Craig it was for his own good. Heh, he believed us!

It's a feat of will power, not to mention bodily control, that one man can bench so many cards and run so many test and not go balls-to-the-wall crazy. Though, he does look a little odd right now with the 'underpants hat' he made himself.

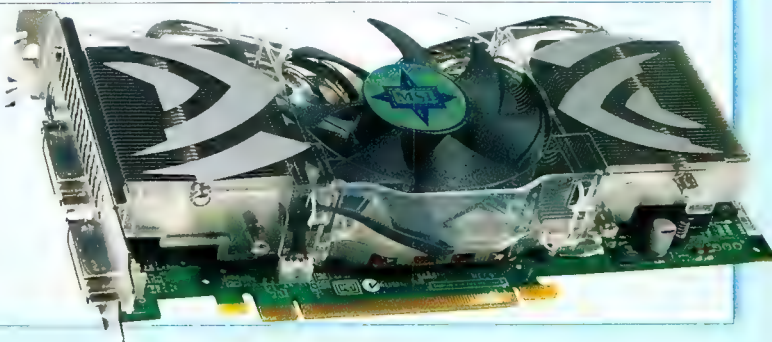
Looking at the results we see what we expected to see – card after card exhibiting the performance results a collection of identical products would reveal. Small discrepancies after the decimal point are all in the realm of standard variance. The cards with higher clocks clearly set themselves apart, but as can be expected from the mild overlocks, it's only a few frames per second at best.

The bottom line is you can't go wrong with any of these cards. It all comes down to pricing and what's in the box, which the following pages of reviews address. Without further ado, read on!

MSI 7900GTX

Price **\$1145** 2D clocks **275/800** 3D clocks **650/800** Supplier **MSI** Website **www.msi.com.tw**

MSI's solution comes at reference clocks, and is bundled with the requisite molex -> PEG power adaptor, two DVI -> D-Sub adaptors and a breakout cable supporting component and S-Video. Software wise CyberLink's PowerCinema and Power2Go are included, as well as Peter Jackson's *King Kong* on the game side, although MSI didn't feel the need to plaster this over its card like ASUS. In a cute addition we don't often see these days, an MSI case badge was also included, so peel it off, stick it to your sister's hair and see what happens.



Leadtek 7900GTX Extreme

Price **\$1220** 2D clocks **275/830** 3D clocks **675/830** Supplier **BCN Technology** Website **www.bcntech.com.au**

Leadtek has been doing the overclocked 'Extreme' thing for a while now, and has rocked up with the newest high end card in the family. While Leadtek has consistently put the most effort into differentiating its cards visually, it still comes down to a couple of stickers and some darker plastic. Serious Sam II and Trackmania Nations get the gaming rights, while PowerDVD 6 and Muvee 3 are on the application side. A molex -> PEG power adapter, component breakout cable and DVI -> D-Sub dongle round out the package.



Inno3D 7900GTX

Price **\$935** 2D clocks **275/800** 3D clocks **650/800** Supplier **Altech** Website **www.altech.com.au**

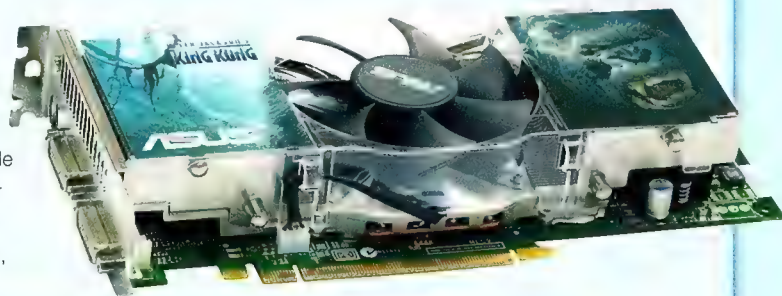
Inno3D is one of the budget providers, seemingly always providing cards at stock with as few extras as possible, yet strangely having a penchant for bundling Delta Force Xtreme with every one of its cards, regardless of price point or target market. Seriously. Still, you can't argue with the price (well, you could, but you'd only convince people you were a loony since you'd be arguing with a concept and not a real person), and the dual DVI -> D-sub adaptors, molex -> PEG power and component/composite breakout cables mean this card should satisfy most people.



ASUS 7900GTX

Price **\$1179** 2D clocks **275/800** 3D clocks **650/800** Supplier **ASUS** Website **www.asus.com.tw**

ASUS has always prided itself on presentation and packaging, usually providing boxes bigger than a house, but this is also because of the goodies included. Unfortunately, not so much the case with their vanilla GTX offering – with only a component breakout, two DVI dongles and a power connector. The software side is more impressive than the rest though – King Kong, PowerDirector 3De, Xpand Rally, Medi@Show SE2.0 and interestingly, VirtualDrive 9 being included. ASUS seems to have also discovered advertising, the heatsink being plastered with a *King Kong* sticker.



XFX 7900GTX Extreme Edition

Price **\$1350** 2D Clocks **275/800** 3D Clocks **690/875** Supplier **Multimedia Technology** Website **www.mmt.com.au**

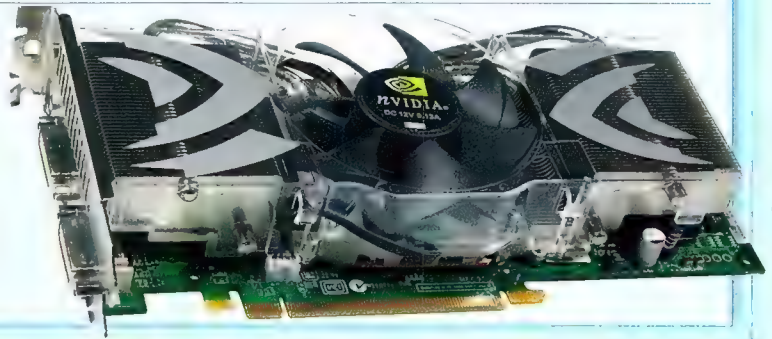
The XFX Extreme card that crossed our desks was the 690MHz core version, although variants exist in 675 and 655MHz as well, so double-check that you're getting what you want before you buy. Starship Troopers (the game, not the movie) was thrown in, as well as a pair of DVI -> VGA dongles, a molex -> PEG power cable and component/S-Video breakout cables were included for TV output. Unlike all the other cards in the round up, XFX's submission was the only one that had differing 2D and 3D memory speeds – usually it's only the core that changes.



POV 7900GTX

Price **\$940** 2D Clocks **275/800** 3D Clocks **650/800** Supplier **Australia IT** Website **www.australiait.com.au**

Point of View (POV) is a Dutch company, and is relatively new in Australia. Its focus, much like Inno3D seems to be on just providing the essentials – the only software provided being a driver disc, with nary a game in sight. All the video breakouts are there as well, although rather than a single giant squid hell-bent on mass video destruction, they've been separated into three distinct cables, to only be attached when required. The requisite DVI dongle and power connector are also included for those who require the backward compatibility.



Gainward 7900GTX

Price **\$975** 2D Clocks **275/800** 3D Clocks **650/800** Supplier **Australia IT** Website **www.australiait.com.au**

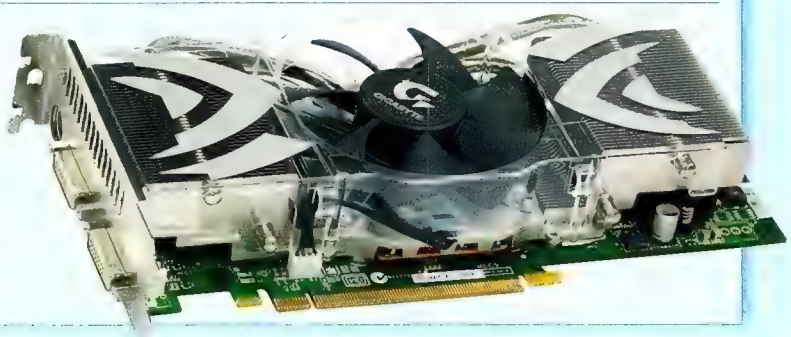
Gainward seemed to disappear from the scene for a while, but is now back in force, especially with its GLH (Goes Like Hell) edition cards. Disappointingly, unlike the heretical red GLH cards, Gainward's GTX comes in standard NVIDIA boring green, like everyone else's. Two DVI dongles, a breakout cable with component, composite and S-Video and a power connector fill out this package, as well as Muvee AutoProducer, Cyberlink PowerDVD 5 and your choice of two games from www.gainwardgamingzone.com.



Gigabyte 7900GTX

Price **\$1130** 2D Clocks **275/800** 3D Clocks **650/800** Supplier **Gigabyte** Website **www.gigabyte.com.tw**

Although Gigabyte has always had impressive packaging, complete with Final Fantasy styled action hero, the actual contents are sadly no more impressive than the rest of the competition. One reference replica card, two DVI dongles and a breakout box featuring component and S-Video make up the hardware side, the software being covered by CyberLink's PowerDVD 6, PowerDirector 3 ME and the ever crazy Serious Sam II. There may even possibly be a manual and driver disc, although we can't remember the last time we used either in a bundle.



Conclusion

And there you have it. NVIDIA's latest flagship GPU, in the hands of every major GPU card manufacturer, and we have a case of identi-isis – a silly word we made up just for this paragraph that means a contagious form of identicalness. And yes, identicalness is another made up word, but you get the gist. It all comes down to this – we usually give a Hot Award to the best performer and best performance per buck, but these cards all so similar none of them really deserve to be marked better among the others.

What we haven't mentioned so far is noise and heat – after all, this is NVIDIA's classic Quadro cooler and all these cards sport it. Is it really any better, and is it noisy?

It's actually damn good. While a two-slot solution, and while it does blow some hot air into the case, it's extremely effective. Our cards didn't pass 60 degrees celcius while under load, though remember this is on an open-air testbench. Still, it's not as blisteringly hot as the ATI X1900 cards, and on

that note it's also a heck of a lot quieter. The X1900XTX under full load with the stock cooler has a whine that approaches elevator music in terms of annoyance. The cooler on these 7900GTX cards, however, is certainly hard to ignore while under full ball, but no more than your CPU or case fans when pumped up to full. And at idle, all of these cards are whisper quiet.

SLI will, of course, give you the fastest performance you can get at this time, if you can afford two of these cards, but if you want to go the SLI route you'd be better off forking out a heck of a lot less cash for two GTs. Remember, the 7900GTs have the same number of pipelines as the GTX, and differ only in terms of clocks, so you can get appreciably faster performance than a 7900GTX at not much more than the cost.

Still, if money is no object and you desire frames per second more than female company, any of these cards will drive demanding games like Oblivion, Tomb Raider, and X3 to new levels of super-smooth freedom.

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Sapphire Radeon X1900XTX Toxic

Craig Simms weathers the red snow storm.

Price \$899

Supplier Sapphire/Achieva

Website www.sapphiretech.com

Specifications Water cooled, switchable fan between 2000 and 2500RPM, 675MHz core, 801MHz mem, extra molex connector required, coolant included.

Sapphire have certainly been pushing their products of late, and why not? Good engineering, good price and being ATI's closest partner has done well for them. Crossing the labs this month is their latest trophy, the X1900XTX Blizzard (or the *Toxic* as it will be named by the time it hits retail channels) – a card that ships with water cooling instead of the usual howling HSF, thanks to partner Thermaltake.

The water cooling takes the form of a single perspex enshrouded copper unit, which plugs nicely into a PCI slot next to the card itself, which has a double slot bracket to accommodate this. If your motherboard isn't laid out conveniently though don't despair – the rubber tubing gives more than enough slack to put the cooler in another slot – and by the time the final version hits the market, the double slot bracket on the

card will be shaved down to a single.

The single slot cooler design means that both the reservoir and radiator are part of the same package – not the optimal solution but certainly keeps everything contained and in one place. Memory chips have acquired their own heatsinks in place of the default cooler. Coolant is already supplied within the unit right off the shelf, however there is of course an opening as well so the tank can either be emptied or filled with your choice of liquid. Since the cooler is not electrically attached to the video card, an extra molex plug is required to power the fan.

We would have hoped that water cooling would have silenced the vociferous X1900 series somewhat – unfortunately the unit is still quite loud thanks to a weedy fan, even with the included switch to alternate between 'high'

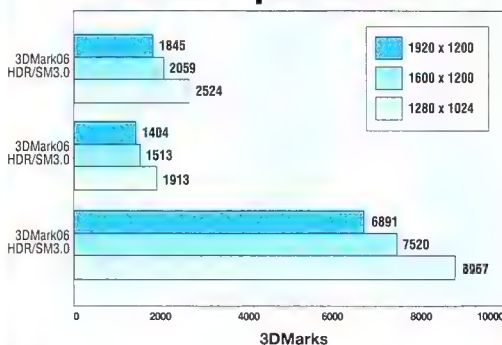
(2500RPM) and 'low' (2000RPM) speeds. Of course since this is a custom solution, neither ATI's drivers nor ATI Tool for that matter will affect the speed of the fan. Overall, it is quieter than the stock ATI fan, which is a blessing.

The Toxic ships at 675/801, a small increase from the default 650/775 of the X1900XTX, but one that's welcome nonetheless. At these speeds, the water cooling with the fan on high kept the temperature to 43°C idle and 65°C under load. Even at the lower speeds, the stock heatsink on the XTX gave us 57°C idle and 84°C load. Tweaking the fan to always be at 100% on the standard heatsink gave us 44°C and 67°C under idle and load respectively – close to the water cooling, but oh so not worth the extra headache from the consistent ear splitting whine.

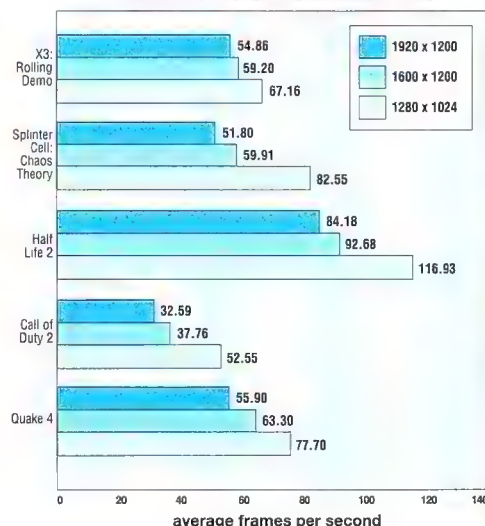
The usual accessories are bundled in, being the breakout component, composite and s-video cables, as well as a pair of DVI dongles, and the requisite power adapter. PowerDVD6, PowerDirector 4 and Sapphire's Select program for games takes up the software side. If you're brand proud, there's even a case badge in there.

If you want an X1900XTX in your machine but are concerned about the noise, then short of rigging up your own water cooling kit with a larger, quieter fan the Sapphire Toxic should fit the bill nicely.

3DMark performance



Game benchmarks



Dell XPS M1710

Craig Simms gets a lap dance.

dell xps m1710

specs

Price \$5,129
Supplier Dell
Website www.dell.com.au
Specifications 2.16GHz Core Duo, 17" 1920x1200 screen, 2GB 667MHz DDR2, Hitachi 100GB SATA HDD, Conexant modem, Windows XP SP2 Professional, Intel Pro Wireless, DVD+-R/W, NVIDIA GeForce Go 7900GS.

No, you haven't picked up a copy of *Laptop Monthly* – this not-so-little notebook puts most desktops to shame. And then kicks the crap out of it to make sure.

The brand new Dell Inspiron XPS M1710 sports a Core Duo processor, up to a 512MB GeForce Go 7900GTX (yes, that's the power of a 7900 512 in a lappy!) and a 17" 1920x1200 screen to boot. Our particular sample arrived clocked at 2.16GHz, 667MHz FSB with 2GB RAM and a GeForce Go 7900GS. It also lights up red from the front and back grills, and the XPS logo on the lid glows as well – and with

a little tweaking, can display 15 different colours, change intensity or be switched off if you're battery conscious. It's as if Dell looked up 'Bling' in the dictionary and said 'Right, we want that!'

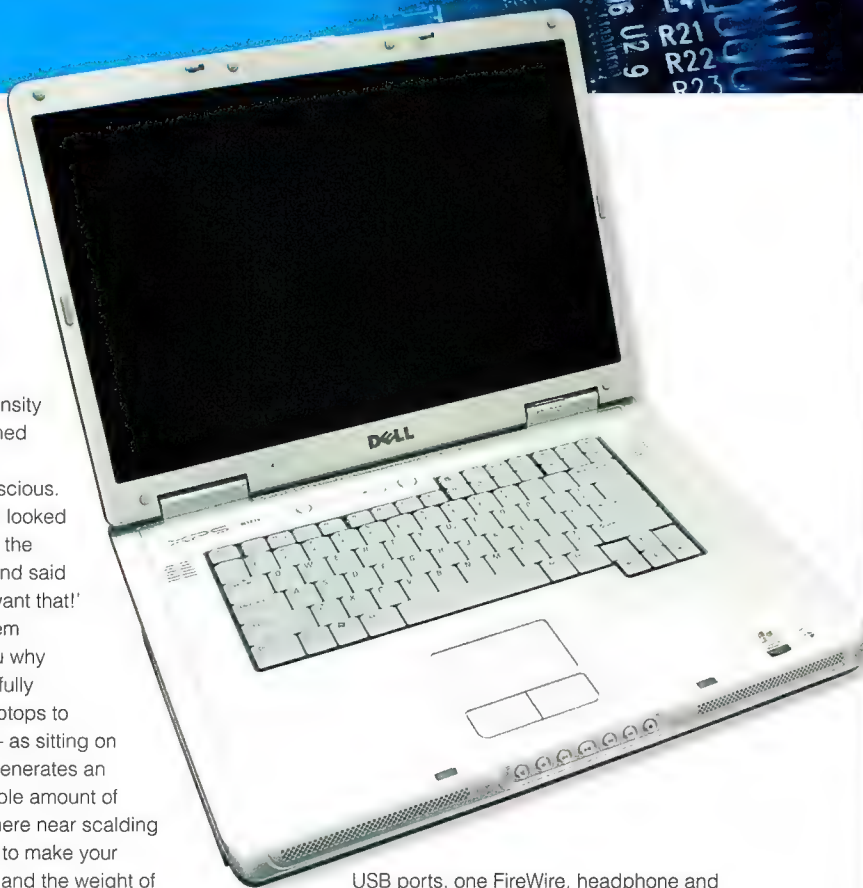
The system reminds you why they so tactfully renamed laptops to notebooks – as sitting on your lap it generates an uncomfortable amount of heat – nowhere near scalding but enough to make your legs sweat, and the weight of it being a desktop replacement slowly gets to you. Make sure to have a table for this one.

The screen is wonderfully sharp and shiny, although there is a fair amount of light bleeding in from the bottom, which may be a distraction for some. There is also slight discolouration in the bottom corners, possibly from the frame around the screen pushing down too hard on the LCD.

The touchpad is excellent, with not only a vertical scroll section but a horizontal one as well, which unlike the horizontal scroll on certain mice actually works incredibly well.

The usual media player controls adorn the front of the Dell, which allows you to control your audio playing without having to switch applications or use the mouse – both big bonuses in our books.

Externally it's connector heaven, with six



USB ports, one FireWire, headphone and microphone jacks, card reader, network port, phone/line in, TV out and DVI and VGA connectors. A Type II PCMCIA slot sits in the side for your expansion needs.

Fortunately the notebook isn't as infested with a large amount of crapware as is expected – the only real infuriating extras being the particularly poor Internet Explorer image scaling feature, and the little notifications reminding you to update Windows, something which, if we're not mistaken, Windows Update did just fine already. Fortunately these can be turned off through 'Dell Quickset' in the system tray.

A decent little Media Center clone called MediaDirect is included, as is a quick access button to transform your laptop quickly into an HTPC. Sound is actually decent for a change as well, with an integrated subwoofer sitting neatly inside the chassis.

To give an indication of performance, we stacked the notebook up against our standard desktop testbench in our regular gaming and application benchmarks. As you can see in the results, the M1710 did very well indeed with the 7900 series card no doubt helping it in the graphics test over the 7800GT laden testbench.

If you have the cash to plonk down on a new system and being portable is your primary concern, you can't go wrong with this machine. It's utterly, if not overly, beefy for a laptop and it's got built-in bling to boot. Seriously, Dell is becoming the new cool.

Dell M1710	
3DMark06, 1280x1024, No AA, 8xAF	3274
SuperPi Mod (4M)	2m 33.921s
HDTach Burst Speed	109.2MB/s
HDTach Average Read	42MB/s
Half-Life 2, 1600x1200, 4xAA, 8xAF	62.74fps

Atomic FX-60 testbench	
3DMark06, 1280x1024, No AA, 8xAF	3724
SuperPi Mod (4M) 3m	2m 51.407s
HDTach Burst Speed	138.2MB/s
HDTach Average Read	75.3MB/s
Half-Life 2, 1600x1200, 4xAA, 8xAF	60.78fps



Not only does the XPS M1710 sport some high-end hardware, it's got pretty red lights!

score **8.5** OUT OF 10

Western Digital Caviar RE2 5000YS

specs

Price \$560
Supplier Western Digital
Website www.westerndigital.com
Specifications 500GB; 7200rpm;
SATA 3Gb/s; NCQ; 16MB cache;
five year limited warranty.

Western Digital has now joined the ranks of Hitachi, Maxtor and Seagate in offering a 500GB drive to the general public. We're reasonably uncomfortable with drive sizes this large with no form of redundancy – and with the TB marker not too far off in the distance (Seagate already has 750GB planned), we wouldn't mind if someone started building redundancy into single drive packages.

Rated at 1.2 million hours MTBF (that's 137 years. Seriously people, when has a hard drive ever lasted that long?), it also features such world class acronyms as RAFF (Rotary Acceleration Feed Forward) and TLER (Time Limited Error Recovery) – easing the pain of drive dropouts from arrays and increasing vibration tolerance from neighbouring drives respectively. In the desktop world this doesn't amount to much (and in fact in most circumstances having TLER off is a better judgement for the home user), however for those who are server focused these are some

nice touches.

Using the now commonplace SATA 3Gb/s interface, the drive nonetheless still has a legacy molex power connector, for those who may be running servers with older power supplies, or are just a little bit behind the times.

Hooking the black behemoth up to our standard test bench, we stacked it up next to a Seagate 7200.9 500GB and Western Digital ADFD 150GB Raptor and assaulted them all with a 32MB HDtch long test to see where it stood.

The results speak for themselves, with the burst speeds for the RE2, 7200.9 and ADFD being 194.4, 247.6 and 137MB/s respectively, and the average read speeds being 61.9, 51.2 and 75.4MB/s, placing WD's 500GB solution nicely near the top in the sustained speed stakes, with the Raptor's burst speed lagging due to it being a SATA 150 drive.



If you're comfortable in using such a large drive without freaking out about data loss, or need a behemoth to base your bastion of RAIDed hard drives on, you could do worse than grabbing yourself an RE2.

CS

score **8.0**
OUT OF 10

Maxtor OneTouch III Turbo External Drive

specs

Price \$1,100
Supplier Maxtor
Website www.maxtor.com
Specifications 1TB (2x500GB);
RAID 0/1; USB 2.0; FireWire 400;
FireWire 800; one year warranty.

Maxtor's OneTouch brand has been on the shelves for a while now, and its third iteration, available in 100GB, 200GB, 300GB, 500GB, 600GB and in the case of our test unit, 1TB, has recently hit the Atomic labs.

The 1TB size is achieved by striping two 500GB drives, meaning that the case is huge compared to that of standard single drive external solutions. A thick layer of soft rubber is featured at the top and the bottom of the case to shield the internals from harsh impacts, and a single button is featured at the front, around which a white light alternates as data is accessed.

Setting up the drive is easy enough, once you've installed Maxtor's software – Windows won't recognise it by itself. It also comes preformatted for an Apple machine, so be prepared to wipe it after you choose whether you want to run the array in RAID 0 or 1.

Attachment is available in USB 2.0, FireWire 400 or 800, with FW800 being easily the fastest (at 77.5MB/s RAID 0 average read), followed by USB2.0 (34.6MB/s) and then FW400

(28.1MB/s). Unfortunately FW800 isn't featured on many motherboards, so you may need to purchase a 1394b add in board to account for this. e-SATA is conspicuously absent, and considering the growing support behind it seems to be quite an omission on Maxtor's behalf.

In operation the unit makes a noticeable amount of noise, however once you move over a metre from it (as most users would in practice), it is almost imperceptible.

In terms of software EMC's Retrospect is bundled, which helps with automating backups. Maxtor's own software is also included, which allows you to select your RAID type and customise what the button mounted on the front of the OneTouch does. Ordinarily it's used for a 'OneTouch' backup (hence the name), however it can be assigned to any executable you wish – handy if you have other backup programs you prefer to use.

While it presents an excellent package



overall and performance is exemplary, the one stumbling block is the warranty – at only one year it shows the amount of faith there is in external products and the way they're handled – you may as well buy two 500GB internals with a five year warranty and throw them in a third party external case.

CS

score **7.0**
OUT OF 10

Altech NRG Aqua

Craig Simms and Ashton Mills like their boxes wet.

Price \$5699

Supplier Altech

Website www.altech.com.au

Specifications One year return to base warranty, P955 EE @ 3.8GHz, 2GB Corsair 6400, Silverstone 750W, X1900XT Crossfire, Spire acoustic dampening foam, watercooled CPU and GPUs

It's no news that companies like Alienware make incredibly beefy off-the-shelf machines for the performance purist who doesn't have time to build their own. And after featuring Alienware's latest and greatest boxen in *Atomic* 63, which came with in-built watercooling no less, local Australian distributor Altech decided it could do better. As fans of *Atomic*, Altech knew exactly what it likes to see in an off-the-shelf PC, and so it built its own version of a watercooled beast machine and sent it in. The Altech NRG Aqua is the result.

We'll be honest here – whitebox vendors don't usually 'get' the *Atomic* mindset, understanding quality of parts or the importance of performance, looks, or noise. It's fair enough, most vendors build PCs for offices, not enthusiasts.

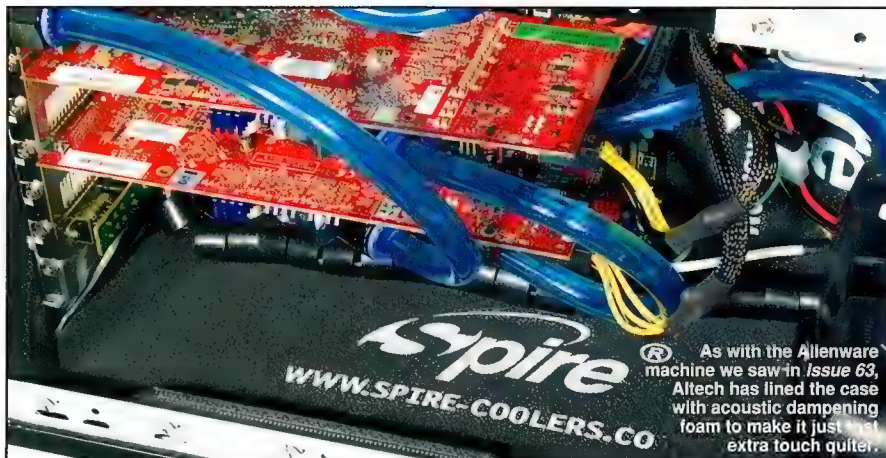
The NRG Aqua is about as far from this as you can get. First and foremost the machine doesn't just include watercooling for the CPU built into the case itself, just as the Alienware unit showed off, but also not one but both Crossfire GPUs are watercooled as well!

And what do you do when you can afford to watercool the most important components in your PC? You overclock, which is exactly what Altech did. The machine comes factory overclocked and – most importantly of all – is covered by Altech's warranty. We don't know of any other vendor willing to do this, so big kudos to Altech for this.

Getting into the box, the external is an Antec PlusView II black case, packed with an intriguing blend of bang, bling and silence.

Based on the ASUS P5WD2-E Premium 975X based motherboard, Altech's machine features a 955 Extreme Edition processor overclocked to 3.8GHz, 2GB Corsair Twin2X 6400 Pro blingy light RAM sticks, a Silverstone Zeus 750W PSU (reviewed this issue, see *page 46*), a Hightech X1900XT Crossfire Edition card paired with a Hightech X1900XTX, Asetek Waterchill cooling for CPU and both GPUs, a pair Samsung Spinpoint P80 drives in RAID 0, Shuttle CR40 DL DVD+-RW and a sound proofed inside using Spire soundproof padding, all topped off by some well placed Antec blue LED bars for some swish blue light loving.

It's important to look at the components here – silent PC aficionados will recognise the Samsung P80 drives as one of quietest drives money can buy. They may only be 80GB in size, but that's price for a single platter quiet drive. Idle, the drives are completely silent, and under load in RAID 0 barely audible inside the case. Pair this with the Spire soundproof padding on all walls (even

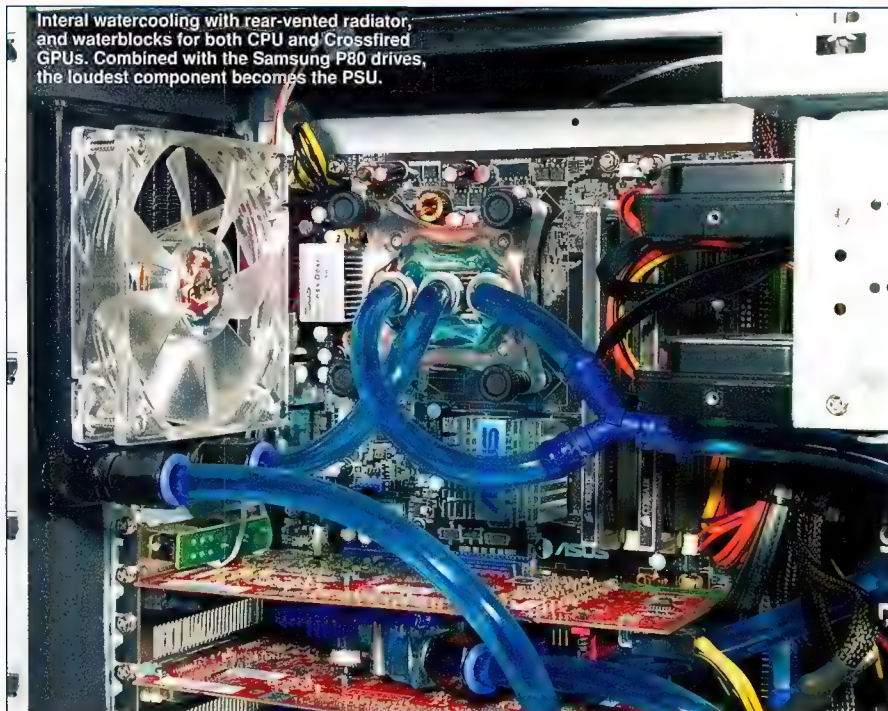


the windowed side panel, though including a window does defy this logic somewhat) and the Asetek Waterchill system and this beefy beast is wonderfully soft on the ears. In fact, with the noisy X1900XT heatsink and fan assembly gone thanks to the watercooling, the noisiest component turned out to be the Silverstone Zeus PSU, a fact not missed by Bennett in his review of the unit (again, see *page 46*). Just to be sure, we swapped out the Silverstone with the stock Seasonic 600W PSU from our testbench machine and ran it through a battery

Altech NRG Aqua Results

3DMark06, 1280x1024, No AA, 8xAF	7901
SuperPi Mod (4M) 3m	4.032s
HDTach Burst Speed	269.1MB/s
HDTach Average Read	94.9MB/s
Half-Life 2, 1600x1200, 4xAA, 8xAF	110.47

Internal watercooling with rear-vented radiator, and waterblocks for both CPU and Crossfired GPUs. Combined with the Samsung P80 drives, the loudest component becomes the PSU.



of benchmarks. One word: *bliss*. This is one of the most powerful, and quietest, machines we've tested in labs.

There are a few caveats though – the 80mm fan mounted on the case window is excessively loud, and not entirely necessary. We achieved our silent bliss machine by disconnecting this fan in addition to the use of the Seasonic PSU. Additionally, despite the use of the Samsung P80 drives, these and the case fans are attached to the case without silicon or rubber grommets to absorb resonant vibrations. These would have been the icing on the cake for the

ultimate silent setup, so perhaps we'll see these in a future version.

Along with the focus on silence, the cable work also deserves note – not to be outdone by Alienware, the NRG Aqua is super-tidy with cables hidden away, routed around components, tied off and shrouded in flexible covers. The result is a clean build and finish, albeit not as stunning or to the same extent as Alienware's custom jobs.

Looking at the beef factor Altech has clearly chosen some performance parts – while for a Crossfire System we'd lean towards the ASUS

A8R32-MVP with an FX-60 in favour of an Intel solution (see the conclusion for an update on this), the Presler cored 955 EE will satisfy just fine with its high overclocking ceiling, and the P5WD2-E Premium is just as silent with its passively cooled chipsets. There's no doubting the X1900XTs are definitely the best card on the market for sheer speed at the moment, but curious is the choice of the XTX for the secondary card in the Crossfire configuration, as Crossfire Edition cards are XT only, meaning the XTX will be clocked down to XT speeds by default – a few extra dollars could have been shaved

off here by going with the cheaper solution, and then overclocking (thanks to the water cooling) both cards to XTX speeds. The Corsair RAM, with its activity LEDs, is pretty damn sexy to watch through the case window, especially with the strategically placed blue bling LEDs.

It's clear Altech wanted to show off an impressive *looking* machine in addition to focusing on performance and silence. As an Intel solution the memory is DDR2 and weighs in at a 5-5-5-2 1T and is verified for 800MHz performance, which should help in potential overlocks.

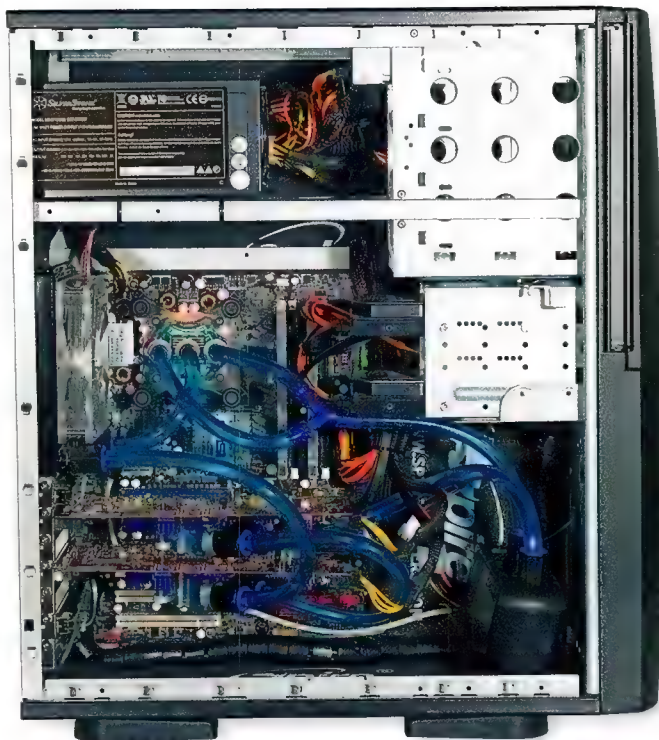
Asetek's Waterchill unit is impressively quiet, with only the occasional trickle heard in the background, although this is actually quite relaxing rather than annoying, like your own personal rainforest in your PC, minus the millipedes. Despite adding effectively seven flexible pipes to the inside of the case, at no time while working inside did it feel restrictive or get in the way. Of course, if you need to remove the CPU or video cards, this will change, but given the specced parts you probably won't find a need to do this for quite some time.

The case itself is typical Antec quality and is of steel construction, meaning it's quite the heavy bastard. A black finish and swing out front door makes it look more server like than anything, although the case window offsets this a little. The 3.5in drive bay can hold up to three hard drives, and is quick removable via a lever system – making the adding or removal of drives nice and easy. Four 5.25in bays man the top, with one occupied by the DVD+-RW, leaving room for bay bus units or other special kit. Quick release 5.25in drive rails are included which are a dream to operate, meaning the days of half pushing, half pulling, all scraping out your optical drives are thankfully gone.

An 80mm fan sits at the front of the 2.5in bay, and a 120mm fan at the back cools the radiator. An easily removable filter lines the front of the case which can be cleaned should dust build up, and of course the signature Antec release mechanism for the side panel is in.

Overall competition is a wonderful thing. Altech took up the challenge to build a well-engineered, powerful machine and threw in a focus on silence to boot. The result is a pre-built system that is actually tempting for an Atomicon, without requiring the Alienware badge or price premium. Throw in Altech's one year return to base warranty, including the pre-overclocked parts, and it's a pretty tasty offer.

It's worth noting that, just before we went to print, Altech informed us of an up-coming AMD version called the NRG Hydro, featuring an AMD FX-60 and two 7900GTX cards in SLI. It will be priced similarly to the NRG Aqua.



ASRock 939SLI32-eSATA

Price \$150

Manufacturer Altech

Website www.asrock.com.tw

Specifications Socket 939; dual 16x PCI-E slots; 3x PCI; 1x PCI-E x1; 4x SATA; 2x e-SATA; 2x IDE; 1x FDD; FireWire; 4x USB; Gigabit Ethernet.

ASRock has a history of creating cheap, yet interesting boards – usually as a bridge between old and new technologies. The 939SLI32 is no different – this board features a slot that is reminiscent of AGP, yet it's actually a socket for a riser board that can be inserted for Socket AM2 support, which can be purchased separately from ASRock should you wish to upgrade your processor in the future. This affects the layout of the board somewhat, with a huge number of jumpers now adorning the PCB.

Speaking of layout, the only glaring problem is that if you have a dual slot cooler on your video card, or go the SLI route then you'll have significant troubles trying to plug in your optical drives, as the IDE slots are rather poorly placed behind and parallel with the PCI-E x16 slots. Another oddity of the board layout is the 20-pin power connector – so make sure you have a power supply capable of supporting this older standard.

By far the most appealing feature of the

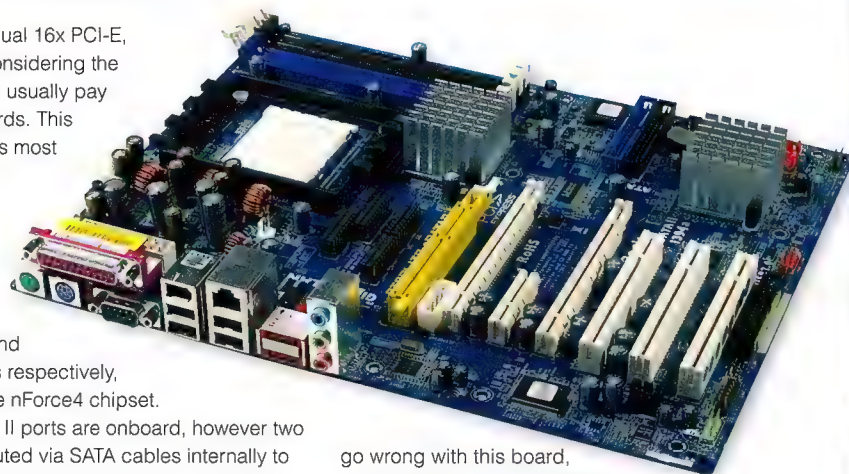
board is its dual 16x PCI-E, especially considering the premium you usually pay for such boards. This affordability is most likely due to the fact that the board features the ULI M1695 and 1697 north and southbridges respectively, instead of the nForce4 chipset.

Four SATA II ports are onboard, however two can be re-routed via SATA cables internally to provide two e-SATA II ports if you wish. Legacy support is still in full swing here too, with two IDE ports, FDD, and a parallel and serial port.

Four USB and one FireWire port are available at the back, but as usual you can add another two USB ports and one FireWire via headers on the motherboard.

5.1 sound is provided by the Realtek ALC660 codec, which will do the job just fine for the majority of users. The whole board is passively cooled too, meaning silent operation for the anti-noise brigade.

Despite its budget origins, you really can't



go wrong with this board, as it performs reasonably close to the competing nForce4 (200 points less in 3DMark06, amounting to an insignificant 1 frame less in Half-Life 2). If you need to save your pennies but still demand the best in performance, there's no reason to pass this one up.

CS

score **8.0** OUT OF 10

CoolerMaster iGreen Power 600W

Price \$200

Manufacturer CoolerMaster

Website www.coolermaster.com.tw

Specifications 600W; 120mm fan; 20+4-pin connector; 4 & 8-pin 12V connector; 2x PCI-E; 6x SATA; 5x molex; 1x FDD.

CoolerMaster has jumped on the RoHS bandwagon and has released a PSU in environmentally friendly form, otherwise known as the iGreen. With mirror shiny finish, 85% claimed efficiency, single 120mm fan and a mutated hydra's worth of sleeved cabling, it looks the part the moment you pull it out of its purple box.

And that's where it goes slightly pear-shaped for the iGreen. Despite the claims of 'super silent' on the box, the supply emits an odd warbling sound when powered, sort of like an air conditioning unit. It is reasonably quiet, but we were driven quickly insane by what sounds partially like someone trying to make fairy fart noises with their mouth while submerged in a fish tank. Or a quieter version of George Jetson's flying car. Your pick.

Hooking it up to a juice-sucking X1900XT Crossfire rig, we pronged the 24-pin power connector with the resident multimeter, showing the 12, 5 and 3.3V rails coming in at 12.19, 4.99 and 3.37V respectively while the

system was idle. Throwing it under load with 3DMark06 at insane settings, this altered to 12.12, 5.00 and 3.37 – strangely moving up on the 5V rail, and while dropping a fair amount on the 12 still easily supplying the power required to keep the system running smoothly.

A light on the back will also let you know when there's been a failure, whether it be due to over/under voltage, over temperature, over current, overloading or a short circuit. Or you could do it the old fashion way and wait for the bang, the smoke and the smell of burning electronics (or 'ozone' as it's known).

The iGreen fits the bill in terms of power production and does exactly what you'd expect a PSU you to do. But you'll want to look elsewhere if you want something quiet – and doesn't sound like a fairy farting.

CS



score **6.5** OUT OF 10

Joytech Nitro Racing Wheel

Price \$149.95

Supplier Take 2 Interactive

Website www.joytech.net

Specifications Four paddles, pedal set, lap and desk mount, rumble effects, USB connector, no external power source necessary.

The spiffy new Xbox 360 wireless controller is nothing less than a piece of geek art, but when it comes to racing games, it's missing that crucial round thingy... a steering wheel. One of the first peripheral manufacturers to jump into the 360 party and fill this void is Joytech, with its Nitro wheel.

As far as fancy technological doodahs go, this wheel is better equipped than Sam Fisher. For lovers of Live, a headset jack is a crucial inclusion that many first-gen Xbox wheels were lacking. It even has the 360 guide button in the middle of the wheel. A couple of paddles on each side of the wheel are great for gear shifting and accelerator/brake functions, but if you use these you're missing out on two of the nicest features of the wheel – the pedal set and Sequential Stick-Shift. The pedals are very tightly sprung, so you don't need to feel as if you're hovering your feet above them, while the stick shifter is pleasantly clicky, making gear changes a smooth feat. However, the pedal set

is prone to moving, so you'll need to stack a couple of White Pages behind them. A set of glowing LEDs on top of the wheel show just how far you've jammed the accelerator through the lounge room floor while careening about like a ferret on speed in Burnout.

While the wheel has on-the-fly sensitivity adjustments, the wheel unfortunately still feels too stiff when turning to the extremes. Combine this with the lackluster lap mount (no, it doesn't involve a nail gun and severe kneecap bleeding) and the overall effect is one of a relatively inaccurate controller when compared to the precise 360 controller. No matter how many laps I practiced in PGR3 with the new wheel, I simply couldn't maintain the same low lap speeds as a standard controller.

And therein lies the problem – while it's sturdy, fully featured and does help to improve the immersion factor within racing games, pro racers are not going to be at their best when



using the Nitro. In the split second world of Xbox Live, those precious few seconds lost for the sake of immersion will probably cost you the race.

BR

score 7.0 OUT OF 10

BenQ W100

Price \$1499

Supplier BenQ

Website www.benq.com.au

Specifications DLP front projector, 16:9 native 854 x 480, 1300 ANSI brightness, 2500:1 contrast ratio; 4000hr lamp life

The government has just cut off your dole payments, the cardboard box you call home is developing a severe case of soggy-itis, and you can't remember the last time you ate anything more substantial than week old bread. Yet, thanks to BenQ, you can now afford a decent projector to go alongside your shiny new 360, which is currently in use as a not-incredibly comfortable pillow.

The W100's native resolution of 854 x 480, supplied courtesy of the DDR DMP x1 digital mirror device, is not going to be suitable for crazily large screens, unless you have a thing for giant blobs of pixels. But it'll still give you a good 65 inches or so of joy before the screen door effect whacks you in the eyeballs.

Thanks to the use of DLP technology, the contrast and colour quality of the images is excellent, especially for this price point, and in this regard makes most low end LCDs look distinctly lacking. We calibrated the projector

using Digital Video Essentials (every home theatre owner should have this disk!) using the simplistic image controls, and found the picture to be excellent. It wasn't the brightest projector to dazzle our retinas, with a brightness rating of 1300 ANSI lumens, but most projector users are happy to view in darkened rooms.

What was most impressive about the DLP technology employed is the fact that this projector is the first in its class to use a speedy seven segment, 4x colour wheel. As a result, even to my highly sensitive, gaming-honed Mk 1 eyeballs the rainbow effect was

hard to pick out, one of the major problems that plague DLP projectors at the low end of the market.

If you shop around you'll be able to knock a couple of hundred dollars off the price of the W100, making it an absolute bargain. Sure, it's not High Definition, but if you expected HD at a little over a grand, you're obviously from the year 2010, or even just completely out of your mind.

BR

score 8.0 OUT OF 10



Samsung 215TW

Price \$1099

Supplier Samsung

Website www.samsung.com.au

Specifications 21" diagonal; 1650x1080 native resolution at 60Hz, 8ms pixel response time.

I'll admit it. I still use a CRT monitor. The fact that it's the renowned Sony G520 should wipe that smirk off your face. This baby has done my SLI 7800GTX's proud for the last year or so, but now that I've used the 215TW for a while, I fear the G520 is going to monitor heaven.

It's only now that widescreen TFTs have broken the 21" viewable barrier that I'm finding them to be of a compelling size. Your thoughts may differ, but when you see this on your desk, you'll appreciate that its widescreen nature belies a bigger screen real estate than you'd expect given its physical dimensions.



The native resolution of 1650x1080 means that there aren't a whole lot of games to natively support it, but the ever handy www.widescreengamingforum.com soon helped us get all of our faves running in the desired resolution.

Perhaps it's because we've also got the graphical grunt to run our games smoothly at these resolutions that I'm now ready to make the switch – there's no need to run the 215TW at lesser, scaled resolutions if you have a nice SLI setup. Which is for the best, as scaled graphics still look disappointingly blurred compared to the native resolution. The dot pitch of 0.27mm means that even when I had the monitor a mere 50cm or so from my face (my preferred yet definitely unhealthy viewing distance whilst gaming), picking out individual dots wasn't easy.

After firing up DisplayMate, it became apparent that the image quality was extremely good. It passed through every test with flying colours, allowing us to get past these boring tests rapidly, and right into the good stuff – gaming and DVD viewing! BF2 looked superb, and the 8ms response time took care of any ghost concerns. Watching a DVD showed the

flaws in the source material, rather than any inadequacies of the screen.

Throw in an excellent warranty as well as a not too shabby asking price, and the 215TW is one of the finest 21" widescreen monitors in its class.

BR



Silverstone Zeus 750W PSU

Price \$350

Supplier Altech

Website www.silverstonetek.com

Specifications 24/20-pin motherboard connector, 8-pin ATX12V connector; 8-pin to 4-pin ATX12V adaptor connector; 6-pin AUX connector; dual 6-pin PCI-E; SATA power connector; 4-pin IDE power connector; 4-pin floppy power connector

The days of treating your PSU like the red headed step child of your system is well and truly over. Us overclockers realised this long ago, but with the growing popularity of SLI graphics card setups and multiple drives in the one PC, a powerful and reliable power supply is an essential inclusion. This PSU serves up a once ludicrous sounding 750W of power, a far cry from the satisfactory delivery of 300W of only a few years ago.

It's not your regular sized ATX PSU, being longer than it is wider, at 150mm (W) x 86mm (H) x 180mm (D), but it'll still fit into a standard ATX bay. Considering it's extreme power oomph, we're surprised that it didn't sound like a jet engine cranking up every time we turned it on. However, the fan is slightly nosier than a regular PSU, and it exhibited a minor clicky sound. The manufacturer rates it at noise level of 24dBA... minimum.

To check how much juice this box of throbbing power was capable of distributing, we hooked it up to a relatively high end system. Okay, it was an amphetamine enhanced ninja of a box, with two 7900GTX cards running in SLI, an FX-60 dual core CPU and 2GB of DDR400 memory. Using a multimeter, we checked out the three important voltages, both at idle and while the machine was under load running 3DMark06. +5V came in at 5.1V while idle, and didn't skip a beat under load, checking in at 5.1V. +12V was just as solid, measuring 12.03V both at idle and at load. +3.3V didn't shape up quite as well though. Idle reached a solid 3.39V, while it dropped a massive 0.01V under load to 3.38V. That's still very impressive.

And as we know, stability of power is as important as volume, so these are impressive results. Overall, as a solid product with plenty

of clichéd beef and stable rails to boot, we can quite happily recommend the Zeus 750W for all your power needs.

BR



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www.coolermaster.com



Gigabyte Poseidon

The wetter the better, says **Bennett Ring**.

Price: \$130

Supplier: Gigabyte

Website: www.gigabyte.com.au

Specifications: 5x 5.25in external drive bays; 1x 3.5in external drive bays; 4x 3.5in internal drive bays; 7x rear expansion slots; 2x front USB 2.0 ports; 1x FireWire (IEEE 1394) port; audio in/out; 440mm (H) x 200mm (W) x 495mm (D); 8kg.

It's not often that we see a case that is designed from the get-go to house a water cooling solution. Sounds impressive, doesn't it? What if we told you this actually means Gigabyte has just cut a couple of holes in the rear of the case? Not so impressed now, are you Mr Gushing Enthusiasm? Still, regardless of how simple this would have been to implement during the manufacturing of the case, it's a nice touch for those who are definitely planning to include some form of

need to print out a suitably simple logo and then cut it out using a Stanley knife. If the colour blue makes you froth at the mouth like a two-year-old who discovered Drain-O, the option to switch the image to white is included, completely free of charge.

You're also accommodated for if you feel the unyielding urge to ogle the insides of your case like a 13-year-old at a Indy girl contest – it's possible to pop out a grilled section on the side of the case and then screw in a provided Perspex window. This will allow the world to see the Gigabyte 3D Galaxy LCS water cooling kit within (huzzah!), which promises to cool your CPU like a fresh sea breeze on a balmy Sydney summer afternoon. Or something.

For a mid-tower the Poseidon holds a respectable number of drives, with a total of nine bays comprised of five 5.25in external bays, one 3.5in external bay and four 3.5in internal bays. The internal bays are housed in a small sideways facing bay at the bottom of the case, and the tool-less clipping mechanism makes adding or replacing a drive child's play in the bay. Bay. Bay. The word has lost all meaning now. Much like Michael Bay's movies.

A couple of low rpm 120mm fans, one at the front, one at the rear, will keep a nice gust continually blowing through the case. Sadly there aren't any controls to adjust the speed of these if you want more, or in the case of those who need lesser degrees, less quiet.

The case itself appears quite sturdy, in so much as squeezing, prodding and pushing it can prove. We'd love to have thrown it from the window of an apartment block to see if it stacks up to Gigabyte's claims of it being 'shockproof' (or quite possibly grabbed the jumper leads from the boot of the mighty Datsun 120Y); but alas we'd like to review more Gigabyte cases in the future. Despite



watercooling in the future.

From the exterior, the Poseidon looks like a relatively standard mid-tower. There are none of the fancy curves, chromed turbines or anime robot inspired constructions that seem to be so popular among case makers who haven't yet realised these went out of fashion two years ago. But flick the power switch, and prepare to be dazzled by the blingy projection unit mounted in the front of the case. Alas it doesn't produce a 3D holograph of princess Leia (or for that matter send you on a quest across the galaxy; get you a lightsaber or grant you cool powers) – instead it beams the catchy phrase 'Poseidon' across your floorspace. Who would have guessed?

If your first name doesn't happen to be 'Poseidon', you can actually customise the projected image with little difficulty. You'll just

being constructed from brushed aluminium, it somehow weighs in at a surprisingly heavy 8kg. Black isn't the only option either, as the Poseidon is available in the sexy silver brushed look that we've come to know and love since we clapped our eyes on our first Lian Li and tried to make a half-human, half-aluminium child with it.

But getting to the crunch, the Poseidon stands out for... well, for not really standing out. In this day and age of cases crafted by the designers of Porsche, cases that include phase change cooling systems and cases that can house a small suburb inside a shoebox sized exterior, the Poseidon is a relatively ordinary case with a couple of tricks thrown in. Having said that, there's nothing really wrong with the Poseidon, especially at its price, but there's nothing particularly outstanding either.



Silverstone TJ07 Temjin

Bennett Ring inspects what appears to be a G5 clone.

Price **\$430**

Supplier **Altech**

Website **www.silverstonetek.com**

Specifications **Motherboard: SSI, Extended ATX, ATX, Micro ATX; drive bay: 7x external 5.25", 6x internal 3.5"; 4x USB 2.0, front I/O port: 1x FireWire (IEEE1394); 1x audio, 1x mic; 12.9kg.**

Let's get something straight right from the beginning of this review – this case has been *inspired* by the Mac G5 case, but it's not a direct clone. First glances will have you thinking the designer of the TJ07 has strong feelings for Steve Jobs, but stand the two side by side and you'll soon see that, sadly, the G5 is still a much sexier design. That's not to say the TJ07 is ugly – place anything next to a G5 case, even Angelina Jolie, and it'll look ugly too (pity about the G5's innards though, snigger, snigger).

The TJ07 is also a much bigger monolith of aluminium, falling towards the large end of the ATX tower range, measuring a healthy 220mm (W) x 560mm (H) x 565mm (D). Thanks to

The six internal bays use a unique sideways facing drive cage, each containing 3 3.5" bays, with a 120mm fan on the end of each cage. Considering some of the new Western Digital drives can happily double as frying pans, these fans should prove to be quite useful. Even though the drive cages are at the bottom of the case, the fans should help to move the heat horizontally out of the side of the case, rather than wafting up to your precious CPU and video cards. Unfortunately, each drive bay just uses a standard screw to mount the drive – there's no rubber or silicon grommets in use to minimise vibrations. Each drive cage also requires the removal of both sides of the case to slide out, as they are simply screwed in place from the rear.

Next to the two 3.5in drive cages at the bottom of the case is a spacious PSU cage, baffled from the main space in the case, helping to keep PSU heat away from your motherboard. But even if your mobo and its components are prone to overheating, a couple of 120mm fans and another two 92mm fans on the rear will keep things nice and breezy. If you're of the tweaking persuasion, the slide out motherboard tray makes swapping out components a cinch.

But possibly the biggest selling point of this case is the extremely rugged construction. If you're going to pack this case to its capacity, apart from needing the GDP of a small third world country to do it, you'll need to ensure it's stiff enough to cope the heavy weight load. This is where the unique aluminium unibody comes into its own.

According to Silverstone, the main structure of the case is built from solid extruded



aluminium panel measuring more than 164cm (5.3 feet) in length and 4mm to 8mm in thickness. They claim that this has resulted in a rigidity twice that of traditional steel cases, and we can attest that this case is definitely more stable and a heck of a lot more capable of dealing with the odd, angry whack than similar aluminium cases. Of course, the trade off is a weight of over 12kg. Unfortunately, the paint job on the top of the case doesn't appear to be quite as rugged – it already had a couple of blemishes on the top panel when we removed it from the box.

A couple of minor tweaks could see the Silverstone TJ07 Temjin as being the ultimate large PC case; but as it stands it's a very attractive, well made and feature filled box that'll keep any power user happy. We look forward to seeing the next version.

its spacious interior, storing more than a few components, not to mention illegal immigrants, is quite possible. We don't know of anybody who has 13 drives, but the seven external (5.25") and six internal (3.5") drives would take care of their needs if they actually existed anywhere outside of our extremely overactive imagination.

ASUS Silent Square

Price \$79

Supplier ASUS

Website www.asus.com.au

Specifications Heatsink for Socket 478/T/939; 90mm 1800rpm sleeved fan; copper base; five two-way heatpipes; aluminium fins; 656g weight

If there's one thing ASUS knows other than making beastly motherboards, it's making beastly heatsinks like this almighty space-bandit. Measuring 14 x 11.5 x 10 centimetres and weighing in at 656 grams, this puppy was designed for premium cooling. Or as the box states – 'dual core overclocking', with 160W of heat being the official cut-off point.

The design of this heatsink closely resembles that of the Tuniq Tower which we looked at in *Atomic 63*, with heatpipes sprouting up from the cooling block, through



two horizontally aligned sets of fins and a vertical fan dropped in the middle. However, rather than opting for merely three two-way split heatpipes, ASUS has equipped it with five two-way split heatpipes, greatly increasing its heat

transference properties.

Popping it onto Chernobyl, even though the air has to flow through two separate sets of fins, it operated almost silently – no doubt thanks to the 1800rpm sleeved fan. In an ambient room temperature of 24°C, pumping 80W through it produced a decent 40°C. This is 16°C of cooling efficiency, which is merely one degree above our top performing heatsinks. Given the minimal noise level it runs at, this is all the more impressive. Just to put the packaging to the test, we dialled the heat up to 160W and watched the temperature rise to a rather manageable 55°C. That's a crapload of heat to deal with and the Silent Square didn't break a sweat – if metal could indeed sweat.

This is a highly efficient, well-designed heatsink from ASUS that is simply begging to help out with a good dose of hardcore overclocking – and silently, at that.

This goldie also comes bearing blue LEDs, if that's your thing.



Swiftech H2O-80 Micro

Price \$245

Supplier PC Case Gear

Website www.pccasegear.com.au

Specifications Watercooler for Socket A/478/T/939; copper/brass radiator; 2700rpm 80mm fan; copper water-block; 350L/hour flow rate

This kit is the quintessence of a do-it-yourself CPU watercooling kit, albeit everything is provided. In fact, all the components are very well organised and clearly labelled, so you no longer have to rummage around for the various bits and pieces. The interesting aspect is the size of all the components – the radiator, reservoir and pump are all small enough to fit practically anywhere. Even a small form-factor system.

Included is one of the most informative manuals we've come across and it isn't full of hyperbolic or superfluous information – just real-world stuff that the reader needs to take-in prior to setting up. The only way it could have been improved would have been to include a finished-product diagram for easy reference, but this isn't necessary for most people who'll purchase this.



As a fairly hardcore professional water cooling kit, everything needs to be pieced together – such as the PVC tubing, of which you're provided with just over a metre's worth to play with.

After piecing it together, it was primed with the provided coolant. Quietly pumping away with not a single leak in sight, we fired up Chernobyl at 80W and, astonishingly, this quiet little Chihuahua peaked at 35°C in 24°C ambient. Considering this performance, you could easily bung on a GPU water block and still have plenty of room to chill.

This is what watercooling is all about. We recommend this unit for anyone even partially interested in high performance water cooling, but isn't quite prepared to hammer the radiator out of the Datsun and steal a few rolls of electrical tape from dad and rig something up themselves. Just awesome.





ATI RADEON X1900 SERIES

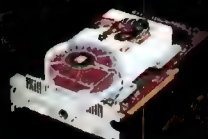
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Prepare your rig for the future of games with the Radeon X1900 series
the fastest consumer 3D graphics processor on the planet!!

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- CrossFire Ready: Accelerate Your Games Further with 2 GPUs
- AVIVO Video & Display Perfection: Consumer-grade HDTV Support
- Software Support: Windows Media Center Edition, Windows Vista™ Capable



■ ATI RX1900 Graphics Partners :

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Quenching your thirst for the latest technology and hardware

There's nothing sexier than new kit. And whether you need to horde your pennies (Budget), want the best power for your dollar

(Performance) or own a small mansion and a collection of sports cars (Extreme), we're here to help with this handy matrix of Atomic

recommended products. You may find your needs fall between categories – that's okay, just mix and match to suit your budget!

CPU's

Motherboard

Memory

Video Card

BUDGET

I can't afford to eat... gimme gear!

intel



Intel Pentium 4 6xx Series
PRICE \$300-970

Single core isn't dead yet, and the Intel 630 can be had for less than 300 smackaroos, satiating those on a shoestring.

AMD



AMD Athlon64 Series
PRICE \$260-550

If you can't afford dual core or don't see the point, the ol' faithful 3200+ still has quite a kick left in it at around \$265.



ECS RS400-A
PRICE \$189

This budget board uses the Radeon Xpress 200 chipset, offering a perfect 'in between' stage for those who need to upgrade slowly.

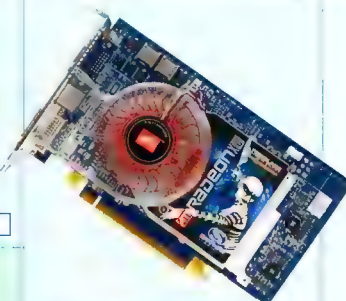
Reviewed in Issue 57 – Page 40



2x512MB PQI Turbo PC2-4200
PRICE \$140

If you can't afford the 2GB, stick with 2x512 to get your dual channel bonus.

Reviewed in Issue 59 – Page 39



Sapphire X800GTO Fireblade
PRICE \$280

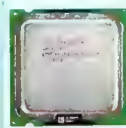
The Sapphire RADEON X800GTO Fireblade is a power packed performance beastie.

Reviewed in Issue 59 – Page 35

PERFORMANCE

Hardware that bangs the best for buck.

intel



Intel Pentium D Series
PRICE \$250-1100

Yummy goodness in an Intel wrapper. The Presler cored 920 is the best value currently at around \$400, and should be able to stretch its legs in the OC stakes.

AMD



AMD Athlon64 X2 Series
PRICE \$500-1050

Burning speed with an attractive price tag, the 3800+ is currently your sweet spot at around \$500, and should overclock that extra mile you require.



ASUS P5N32-SLI DELUXE
PRICE \$399

It doesn't get better than NVIDIA's new SLI x16 platform and dual-heat-pipe cooling for the Pentium.

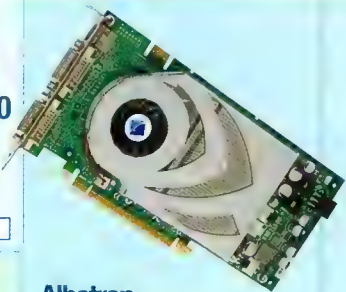
Reviewed in Issue 59 – Page 45



2x1GB PQI Turbo PC2-4200
PRICE \$300

PQI understands value, fortunately for us they also understand performance.

Reviewed in Issue 59 – Page 39



Albatron 7800GT Super High
PRICE \$650

Still the value king, the 7800GT will keep the average user happy. This one is clocked a little higher than most, which is all good in our books.

Reviewed in Issue 60 – Page 38

EXTREME

Gimme power. Money is no object.

intel

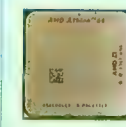


Intel Pentium 955 EE
PRICE \$1700

Dual core is the future, and the future is inside this smoking chip with high overclocking potential.

Reviewed in Issue 61 – Page 35

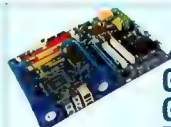
AMD



AMD Athlon64 FX-60
PRICE \$1700

Unlocked multipliers and hot dual-core lovin' means joy. You can't go past the FX-60.

Reviewed in Issue 61 – Page 35



Gigabyte GA-1975X
PRICE \$445

The 955EE and CrossFire have never been more at home. Plus turbojet wind tunnels!

Reviewed in Issue 62 – Page 39



2x1GB Geil PC2-5300 Ultra
PRICE \$510

The Geil's screamed through our lab tests, proving their dominance for the Intel platform.

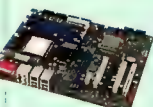
Reviewed in Issue 59 – Page 39



X1900XT CrossFire
PRICE \$950x2

If you can find a CrossFire Edition card, pair it up with a standard XT for max speed.

Reviewed in Issue 62 – Page 37



ASUS A8R32-MVP Deluxe
PRICE \$329

Back in black, ASUS rocks the house with dual PCI-E x16 slots for CrossFire.

Reviewed in Issue 63 – Page 35



2x1GB OCZ PC4000 EB Platinum
PRICE \$535

OCZ provides quality products for the hardcore – and this time is no different.

Reviewed in Issue 59 – Page 38

www.scorptec.com.au
proud to stock the best of kitlog



Coolers



Thermalright Golden Orb II
PRICE \$49

For such a large and effective heatsink the price is hard to beat. It's low profile too, so should fit in all sorts of cases.

Reviewed in Issue 58 - Page 37

System drive



Seagate Barracuda 120GB
PRICE \$120

These 120GB drives are fast and sweet, and yet the price is right at around a dollar per GB.

Reviewed in Issue 53 - Page 41

Display



BenQ FP71V+
PRICE \$599

This 5ms 17in LCD is cheap and speedy, and plenty good enough for even the most fussy of grandmas. Send her your love today!

Reviewed in Issue 54 - Page 48

Speakers



KOSS SB40
PRICE \$129

You'll find that these circumaural boomers will do you justice just fine if you can't afford a THX 7.1 platinum plated surround sound setup.

Reviewed in Issue 38 - Page 30

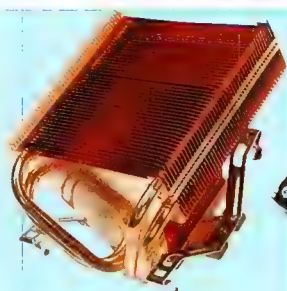
Cases



CoolerMaster Ammo 533
PRICE \$100

Perfect for LANs with its heavy duty handle, military styling and rugged construction, the Ammo blasts the budget competition away.

Reviewed in Issue 60 - Page 50



Thermalright XP-90C
PRICE \$99

Thermalright built their business around effective coolers, and the XP-90C is one of the best money can buy. It looks secks too!

Reviewed in Issue 58 - Page 33



Western Digital Caviar RE2 WD5000YS
PRICE \$560

Excellent performance and massive capacity makes the Caviar RE2 a winner in our books.

Reviewed in Issue 65 - Page 41



Samsung 930BF
PRICE \$750

Clocking in at 4ms, this gorgeous 19in screen has a colour depth and tonal range that will make you weep with joy.

Reviewed in Issue 61 - Page 46



Altec Lansing MX5021
PRICE \$349

This 2.1 set is for those after a decent yet simple setup. The next best thing before 5.1 sound.

Reviewed in Issue 47 - Page 85



CoolerMaster Stacker 830
PRICE \$340

Like the Stacker before it, this sensational Stacker stacks sumptuous specifications selaciously.

Reviewed in Issue 61 - Page 36



Asetek Vapochill Lightspeed
PRICE \$1129

Vapour phase change. Ooooh. Vapour. Phase. Change. No matter how many times you say it, it's still cool (pun!)

Reviewed in Issue 64 - Page 38



Western Digital Raptor WD1500ADFD
PRICE \$480x2

Dear lord. The performance king hath cometh, short of whacking in a SCSI. Buy two and RAID 'em.

Reviewed in Issue 62 - Page 40



Dell 3007 WFP
PRICE \$2899

Thirty inches. 2560x1600. 11ms G2G. If you can handle the size and cost to run this massive beauty, you won't be disappointed.

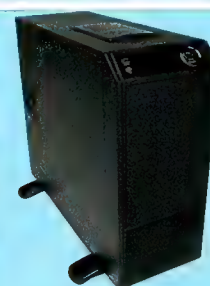
Reviewed in Issue 61 - Page 49



Logitech Z-5500
PRICE \$699

Able to play the 'liquid gold' that is DTS 96KHz/24-bit, this 5.1 beast can wreck both home and hearing alike with equal impunity.

Reviewed in Issue 48 - Page 56



Nextherm ICS 8200
PRICE \$470

Packing a peltier with an LCD temperature readout, you can't go past this cool case and not want to kiss it all over.

Reviewed in Issue 54 - Page 50

BIOSHOCK

Logan Booker descends into the depths of Rapture with Irrational Games' latest FPS/RPG opus Bioshock. And he's really, really scared.

Although Franklin D. Roosevelt said perhaps the most famous quote on fear in his 1933 inaugural address — 'The only thing we have to fear is fear itself' — it was French philosopher Michel Eyquem de Montaigne, in his famous work *Les Essais* a few hundred years prior who gave us the more concise 'C'est ce dequoy j'ay le plus de peur que la peur' — 'The thing I fear most is fear'.

So if it is indeed, as Roosevelt and de Montaigne would have us believe, fear itself that we should concern ourselves with, then what *is* fear? What provokes those feelings of helplessness and despair, nurtures confusion and sparks the survival instinct built into man's brain by the wise hand of evolution? Although such questions have been debated for centuries, along with other philosophical quandaries, modern film has done its best in the meantime to tap into our paranoia, milk terror from it like venom and poison our conscience with its taint. And to some degree, it has succeeded. Movies such as George Romero's *of the Dead* series and the subtler film adaptation of Koji Suzuki's novel *Ringu* are more than able to scare even the most stalwart horror veteran.

Games, however, are perhaps the greatest medium of all in which to cultivate fear. While a movie is limited to characters on a screen, forever cursed to repeat their performances and leave the viewer, for the most part, an outsider to the machinations of the director, a game is limitless. In the game world, the designer is free to 'play' the player, to manipulate their feelings like marionette strings. Not only can the designer control what the player sees, but also how they interact and react to events and characters in-game.

It was by harnessing the unique story-telling properties of games to provide this experience that developer Looking Glass was able to make *System Shock 2* more frightening than any game that had come before it. Trapped on a ship in the far reaches of space, with nothing but mutant

humans and a crazed AI called SHODAN as company, *System Shock 2* led the player on a twisted journey in a reality that demanded to be tackled, medicated and institutionalised. Although Looking Glass is no more, from its ashes rose Irrational Games. Now that the developer has had the opportunity to warm up with titles like *Tribes: Vengeance* and *SWAT 4*, it's ready for the big time.

It's ready... for Bioshock.



SHOCKING LEGACY

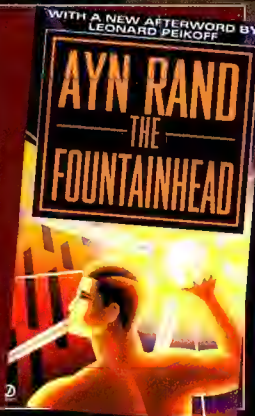
Although critically acclaimed, *System Shock 2* was not a best seller. Joe McDonagh, business development manager at Irrational, believes the games complexity and inaccessibility led to its downfall in addition to lacklustre marketing.

'Well SS 2 was a very complex game,' says McDonagh. 'This was only a problem because we threw that complexity at the player right from the start. Our motto for creating [a] game is that it can be as complex as it is accessible.'

Hence, Irrational has taken a different approach with *Bioshock*. Not only will the game dynamically control difficulty to help or hinder the player depending on their progress, but it will also detect how adeptly the player negotiates the user interface and controls, and can reduce or increase the amount of tips that appear. Irrational has also gone to great lengths to keep the UI streamlined — something McDonagh believes was problematic in *System Shock 2*.

AYN RAND

Ayn Rand wrote a number of influential books during her life, including *We the Living* (1936), *The Fountainhead* (1943) and *Atlas Shrugged* (1947). Much of her work was written to express her many views on society, covering everything from capitalism to socialism. In her books, she attacked communism, and it is from these beginnings she formulated her own idea of a utopian society based on the individual rather than the collective.



CK

The utopia time forgot

From what we've seen of the game, Bioshock will be more than a simple 'spiritual successor' to System Shock. Although the comparison is apt, it does not do the game's unique flavour justice. System Shock 2 was set in the future, on a ship in space, while Bioshock takes us back to an alternate 1960s where the themes and visuals are, literally, more closer to home.

Bioshock is heavily influenced by the philosophy of Ayn Rand, the Russian-born writer who put forth the idea of Objectivism – the belief that one should look out for the individual in pursuit of their own happiness, rather than servicing the needs of the masses. Her philosophy is clear in defining the difference between 'rational self-interest' and 'selfishness without a self' (basically, improving one's self without detriment to others, and improving one's self to the detriment of others). Progress is made with mutual respect to society as a whole. Objectivists also believe in free market capitalism; that is, an economy that regulates itself. These ideas are readily apparent in Bioshock's story and in fact, form the foundations of the game.

According to Ken Levine, general manager at Irrational, Bioshock takes place in an underwater city called Rapture, founded by a character called Andrew Ryan (a play on the name Ayn Rand), a Soviet expatriate who believes in a society comprised only of the elite, built on the philosophies of Rand. He gathers the greatest minds the world has to offer, and provides them a place to live and thrive. Ryan becomes the city's leader, and for a time things are swell.



The many themes of Bioshock are apparent almost immediately on seeing the game in action. From the Art Deco level design to the half-century old technology mixed with modern-day concepts like genetics, there's no doubt you're in a world fresher than an 18-year old kid at a high school formal.

Ominous messages scrawled in blood, mutated corpses and water. A scary mix, if you don't like blood, corpses or water.



They don't remain swell, however. A pair of Rapture scientists make a startling discovery – a sea slug that can turn matter it digests into raw stem cells. Suddenly, extreme genetic alteration is possible and the people of Rapture start to enjoy being smarter, slimmer and healthier. Ryan, unfortunately, does not have control over the discovery and instead, a man called Fontaine corners the market for genetic enhancements. The stem cells, dubbed 'Adam', become the catalyst in a civil war between Ryan and Fontaine, resulting in the annihilation of not only most of the city's inhabitants, but the natural supply of Adam as well.

Rapture quickly becomes a dangerous place; Adam like a drug to the genetically modified. People begin to lose touch with their humanity and the city, once founded with the betterment of mankind at heart, becomes a festering necropolis for the darker side of the human soul.

It's lucky then that you get a chance to check out post-war Rapture. We guarantee it's an enlightening experience.

ADAM

Essentially, Adam is the name given to the raw stem cells excreted by a newly-discovered species of sea slug in the game. It becomes a type of currency in the underwater city of Rapture. Fontaine, a young entrepreneur who controls the discovery, is able to create a market for genetic alteration. It ultimately leads to a civil war between Fontaine and Ryan.

Adam in-game serves as currency, in the same way nanities did in System Shock 2. The player can spend Adam to install Plasmids at one-use only genetic enhancement stations. The natural sources of Adam were wiped out in the war, making supplies precious. Adam can be found on dead bodies around Rapture, or on Gatherers.

Survival of the fittest

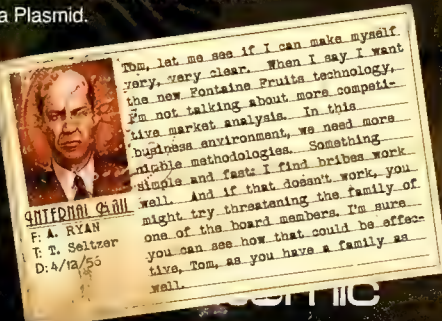
We talked about fear earlier – and for good reason. Bioshock, like System Shock, is all about scaring the player out of their wits, to keep them on their toes and to force them to sneak around, carefully investigating unexplored areas and not rushing into unknown situations. Although Joe McDonagh, business development manager (and a former game designer) at Irrational says 'If you want to run and gun your way through the game, then why not?' Bioshock is definitely more rewarding if you make use of your environments and examine the details. If you do decide to take it slow, try to keep it together when the lights suddenly go off, or a long shadow starts clawing its way around a corner.

Irrational has stressed that Bioshock relies heavily on emergent gameplay. Basically, the game designers provide the environment and allow the player to solve problems and manipulate their surroundings how ever they see fit. As a result, the player will progress through the game under their own steam and get past obstacles in ways not intentionally designed. Emergent gameplay is important in creating an open-ended game according to Irrational, and requires a lot of work with NPC and creature AI to give the game the ability to set up an environment where emergent gameplay is possible.

'We wanted to use the power of the new technology [processing, graphics power, etc] to push open-ended gameplay to the next level and we think we've achieved that through the [AI] ecology. The world of the game lives and breathes on its own. It's up to the player how he interacts with that world,' says McDonagh.

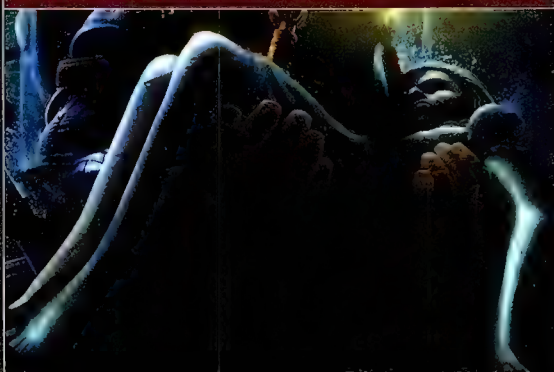
To this end, opponents such as the Protectors are given basic rules to follow, like keeping an eye on the Gatherers. One example of gameplay we saw had the player mark a Protector as an 'enemy' using a Plasmid.

It didn't take long for the security systems to pick off the Protector, leaving the way clear for us to proceed. With one less Protector around, you can be sure that the Gatherers in the area would be that much more alert and suspicious.



GATHERERS

Genetically modified children designed to collect Adam off the deceased. Seeing as Adam is not exactly something one carries around in their pocket, the Gatherers haul around giant syringes to extract the substance. What they do with it afterwards to convert into usable Adam is, well, disturbing to say the least. Although you'll find supplies of Adam around the place, the most significant portions can be found off Gatherers. So, if you don't have a problem blowing away small children, you'll be fine.



It goes without saying that the Protectors are more than prepared to take you out. But only if you give them reason to.



bioShock

We wanted to use the power of the new technology to push open-ended gameplay to the next level and we think we've achieved that through the [AI] ecology. The world of the game lives and breathes on its own.

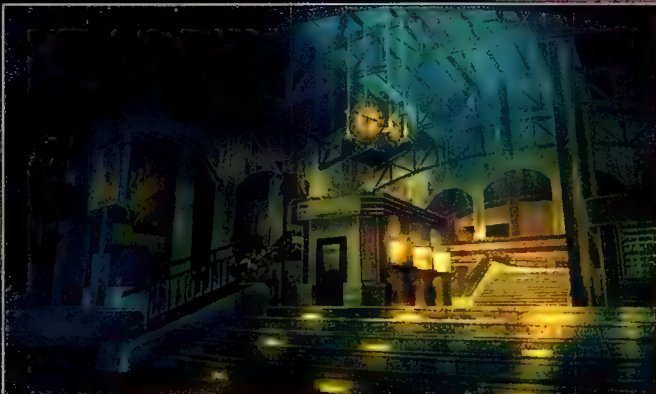


PLASMIDS

Bought using Adam, Plasmids grant the player special abilities such as increased speed and strength. Players, however, can only have a select number of Plasmids installed, requiring some thought and forward-planning to make best use of the one-use only enhancement stations around Rapture, that allow you to swap and change your limited load-out. Obviously, Plasmids require the alteration of the player's genetics, and there's a risk of losing your humanity. It is up to the player to decide if it's worth it.



The concept art does a great job of expressing the mood of the game. Irrational plans to emphasise the feeling of being trapped but having water leak from roofs and the structures creak from pressure changes.



Putting it together

Want a weapon? With nothing but the shirt on your back and a couple of barnacles on your shoes, there's not much for you to use to defend yourself in Bioshock – at least to start. So, it's up to the player to find weapon prototypes in the game and add to them to make them better. Most impressive of all is the fact that the modifications are reflected on the weapon model. The pistol-like contraption we were shown looked like your average handgun, except it was belt-fed from a can of soup. Expect to scavenge like the Dickens to make your meagre arsenal as potent as possible.

Like System Shock 2, many in-game weapons can accept multiple ammo types, such as anti-armour and anti-personnel. It's in your best interest to make sure you have the right ammo for the job, or you'll just end up wasting precious supplies.

Unfortunately, we didn't get to see any weapons other than the soup pistol, but we can't wait to see what Irrational comes up with – especially considering the options customisation will bring.

Unreal visions

Bioshock is based on a heavily modified version of the Unreal 2 engine – the same one used in Tribes: Vengeance and SWAT 4. Irrational has scavenged some pieces of Unreal 3 for the Xbox 360 version of the game (or so we



AND OTHER REALLY SCARY THINGS...

There's many more 'creatures' to encounter in the city of Rapture. The Aggressors, for instance – deranged soldiers of Fontaine's genetically altered army, roam around with nothing else to do but kill. That's it. Bioshock's 'AI ecology' promises to create an environment where scripted sequences and predictability do not exist. You will need to think and act quickly if you want to survive.

That said, not everyone is out to get you. If you decide, for the sake of your humanity, to leave the Collectors alone, expect to be contacted by persons unknown who wish to aid you in your escape.



Dear lord, check out that bloom! And those shadows! Bioshock will make use of the latest technology available from Epic for the Unreal engine. We expect Xbox 360 owners will enjoy Unreal 3 tech while PC users will make do with the very capable 2.5.

believe), and Unreal 2.5 for the PC. Subsequently, there's normal mapping, bloom, high dynamic range and soft shadows – everything a spooky game like Bioshock needs to be as spooky as it can be.

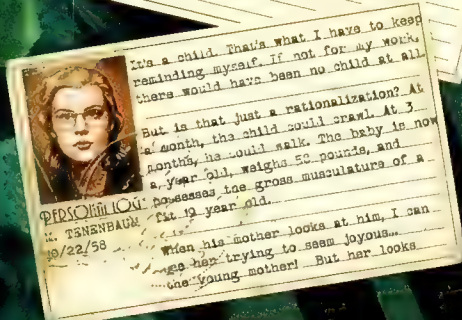
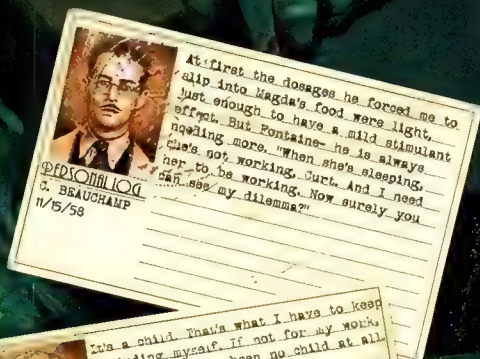
When you see the game in action, you'll immediately notice the care Irrational has taken in maximising the effect of the lighting and texturing to create a very unwelcoming atmosphere. Lights are hazy, almost as though a thin fog was permeating Rapture and the rusted metal of the underwater city is accentuated so you can almost taste the tang of oxidation in the air. Water drips in distressingly large quantities from the ceiling and every so often the facility will creak like an old diesel submarine. The areas feel moist and cramped, and it doesn't help that bodies in various states of mutation rest scattered dead around the place. You'll find them with their heads caught in elevators, crumpled on stairs or squashed between cabinets.



PROTECTOR

Protectors are lumbering genetic monsters armed to the teeth with heavy weaponry. They follow the Gatherers around and, oddly enough, protect them from harm. The relationship is an odd one – Protectors will help Gatherers get around, offering them leg-ups to get to difficult places. It's an odd interaction to see in a place torn apart by a brutal civil war.

Protectors will leave you alone if you stay away from them. If you tick them off however, well, make sure you've made peace as you'll soon learn how they live up to their moniker.





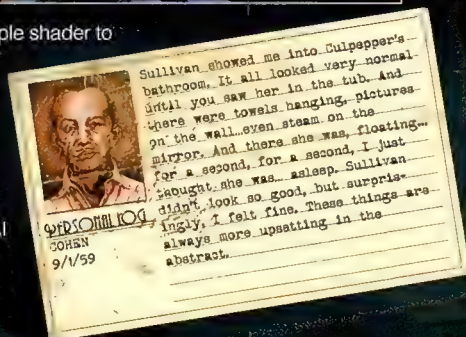
That's not some futuristic weapon you're holding – please it's the 60s. Nope, it's a crappy pistol with a soup can attached. Think it'll make a dent?

Rapture reeks of death and misfortune, yet at the same time exudes a former grandeur that can never be reclaimed. The 60's Art Deco style of much of the game took a while to perfect, explains McDonagh. 'We wanted to make this [Bioshock] a beautiful space,' he says. And it is beautiful, in a creepy, sad kind of way.


Irrational has said that water plays a major role in the game. Okay, this is kind of an obvious point when you consider Rapture is under the ocean, but Irrational has taken to the physics and appearance of water like a hairdresser to an afro. While we didn't get to see the demo in action, we've been assured that Bioshock will feature some of the most realistic water simulation ever. Considering it's so damn hard to get water looking just

right, short of whacking a simple shader to it and accepting we're just not there yet in terms of the technology, Bioshock looks to innovate in the graphics department as well as the FPS/RPG genre.

The graphics, sound and AI work to build an atmosphere thick with doubt and mystery. You won't be able to stop



Bioshock is not without plants. Not that it needs them, but it doesn't hurt to put a bit of variety into a game that's going to be predominantly inside a giant steel city. Remember the Garden sector in the original System Shock and how nice the change was? Yeah.



yourself from delving deeper into the facility to uncover its dark past – if you don't run screaming like a girl after a few minutes of play.

Losing touch

Genetics is one of many central themes in Bioshock. It also serves as an interesting game mechanic that will pose the player many a moral conundrum. Adam allows you to improve yourself using Plasmids, making Rapture that much easier to survive in. How much easier depends on how willing you are to sacrifice your humanity for increasingly more powerful abilities. Irrational plans to play on your morality in a couple of ways.

Firstly, you'll be shown reflections of yourself during the game, so there's no way for you to escape your decision to play God. Secondly, the best source of Adam is from the Gatherers who are, essentially, innocent children forced via genetics to collect Adam from the corpses that populate Rapture. And it's not like these poor souls are going to give up the Adam without a fight.

Finally, there is nothing to stop you – if indeed you indulge in the wonders of Adam – from meeting the fate of everyone else in Rapture. The discovery of the stem-cell creating slug destroyed what was once a thriving centre of the world's elite. If they couldn't control their need for genetic alteration, what makes you any different?

The end of days

How do you make walking down a corridor more tense and exhilarating than facing an army of zombies or a Samara-like figure scrabbling from your TV? Bioshock can show you, we have no doubt. Honestly, Bioshock is getting ready to make just as big an impact on gaming as System Shock 2 did, if not a larger, more successful one. From what we've seen, it's the best combination of survival horror, RPG and FPS you're going to see in some time. All that matters is whether you can wait to play it. Take 2 currently plans to release the game on Xbox 360 and PC early next year.

We don't know about you, but we're already in rapture.

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specialfeature

get in the game

GET IN THE GAME

Ever wanted to get into the games industry? Christopher Taylor shows you how.

A lot of us, at some point in our lives, have wanted to get into the games industry. Let's face it – it's a career path that's been romanticised. It's silly and illogical, but we love to think that walking into Blizzard every day would never stop being the coolest thing imaginable.

Obviously, the reality of the situation is a little different. Game development is driven by profits just as much as cinema, funeral services and llama farming. But it can still be one heck of a rewarding industry to work in, so if you've ever wanted to get a foot in the door here's how to do it, from the mouths of the developers themselves.

BREAKING HEARTS

If you're considering a career in game development it's important to first understand some 'home truths' so you know what you're getting into. Here are some of the biggest.

Doing it for money: 'There's a big difference between developing a commercial product for a game developer with a hard deadline ahead of you and working on a fun mod with a few friends in your spare time,' says Morten Brodersen of Third Wave Games. You might be able to produce a slick Half-Life 2 mod, but that doesn't necessarily mean you have what it takes to make it as a professional.

Irregular employment: 'The most likely career path is a series of jobs, project by project, working with whoever is hiring at the time and on whatever project they assign you to, with plenty of involuntary "holidays" in between,' says Gregor Whiley, Vice President of SSG.

Job security: The recent closure of the much-loved Ratbag Studios served as a timely reminder that a job in the games industry isn't always secure. Whiley says, 'I think all Australian developers are now hostage to the fortunes of the international market.'

Conditions: 'If you do get work for a large publisher as an independent developer, be aware that you'll be at the wrong end of a very large power imbalance,' says Whiley. 'Get advice before you sign anything because the first contract you're offered will be as close as the law allows to slavery.'

Hours: '[During "Crunch Time"] I'll spend up to 14 hours a day coding,' says Alistair Doulin, a programmer at Auron.

People and politics: 'Modern games require big development teams,' says Whiley, 'so [you] must be able to work well in teams and cope with the vagaries of office and publisher politics. A certain calm detachment and the ability to bide your time until you can work your way up to something more rewarding would be useful.'

The best of the best: Remember, you're not the only one interested in getting into game development. Tom Crago from Tantalus Interactive says, 'It's an industry filled with highly skilled people. We like to think we're the cream of the crop in terms of programmers and artists. There are lots of people who want to make games for a living and as a result it's a tough industry to get into.'

GAME
DEVELOPMENT
IS DRIVEN
BY PROFITS
JUST AS MUCH
AS CINEMA
AND LLAMA
FARMING.

TELLING TALES

If you're one of the many people interested in writing for games, narrative writer Logan Rapp is less than positive about your prospects. 'Right now, the truth is your art is at the mercy of executives and investors in a way that no other entertainment industry even comes close to. The status of the writer is quickly rising, but in many of the large studios the writer is still an independent contractor they bring in to do the work and then send on their way, without having any sort of connection to the project physically or emotionally.'

A DEVELOPERS LIFE FOR ME

Alistair Doulin described his typical day to us. 'My day usually begins with me checking my email and bug list to make sure none of the

systems I've written have completely died during the previous day's testing. I then check my current task list and I'll usually code all the way through till lunch. At lunch, we have a half hour of gaming where we can all get on the company network and play one of the latest first person shooters and the MMOG [we're currently working on]. After lunch I'll either work on fixing bugs, have meetings about the tasks we have coming up or I'll knuckle down for an afternoon of heavy coding.'

'Some of the funniest things as a game programmer can come during crunch time,' he says. 'Spending up to 14 straight hours coding with too much Coke and pizza can bring out the best, and the worst, in people. The jokes have ranged from restarting someone's computer remotely to stealing someone's semicolon key. I've also returned to my desk to find rotting

sandwiches when a mistake I made broke the latest build, meaning we all had to stay back another two hours.'

There are so many things about this industry that could put you off that it's simply impossible to list them all, but Brodersen sums it up the best. 'If you don't like being challenged, if you don't like to work hard or if you don't like to have to learn new things every day, then it may be better to work somewhere else and do a fun mod in your spare time instead.'

THE STATE OF PLAY

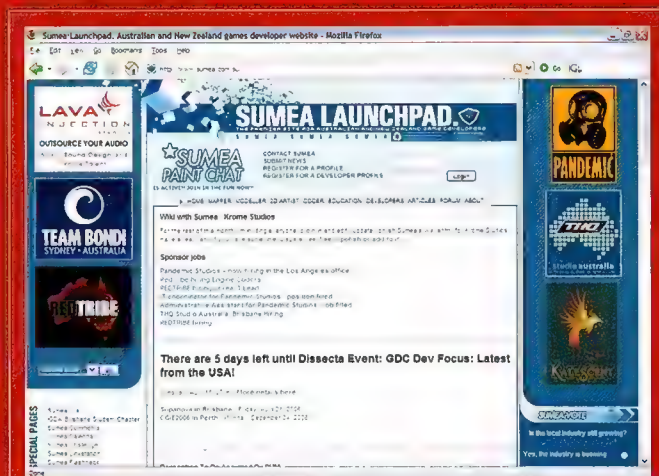
While there's plenty of people bemoaning the state of the local games industry, the general consensus is that it's doing alright. Sourì, founder of Sumea Launchpad, says, 'The industry has suffered a series of huge setbacks recently with the closure of Ratbag Studios and Perception letting go of their staff in Sydney. There are also concerns for Atari Melbourne House, Australia's longest running game development studio, due to Atari's well-publicised financial woes. On the other hand, many other local studios have been rapidly expanding and hiring across a wide range of positions recently, which has been very encouraging. However, the local industry, just like [its] international counterparts is facing some extremely challenging times ahead as it prepares for next-gen game development, but I remain optimistic about the outlook as we have some extremely talented professionals here producing world class quality titles. The industry is well supported in other areas, with the likes of the Game Developers Association of Australia (www.gdaa.com.au) actively promoting local developers.'

According to Sourì's site, there are more than 60 active developers in Australia, including well-known studios like Creative Assembly, Microforte, Pandemic and THQ. As you read this, they're developing games for just about every platform you can think of, from interactive television to Xbox 360.

LAUNCH YOUR CAREER

If you're interested in getting into game development, Sumea Launchpad is an excellent resource. Since 2002 it's been covering news, events and information related to the Australian games industry. Many local developers use it to advertise job openings, so it's a good idea to check back regularly. To check it out, point your browser in the direction of www.sumea.com.au.

Sensing the potential for export dollars and job creation, the state governments have gotten behind the local industry in full force. Victoria and



Sourì's Sumea Launchpad is a popular resource for local developers and institutes.

Queensland in particular offer all sorts of incentives to companies who set up shop within their borders.

'Australia has a long and rich history of game development,' Brodersen says. 'It's not necessary to go to the US or UK to work for a top level company. You can do it right here in Australia and the skills learned here will be equal to the skills you would learn elsewhere.'

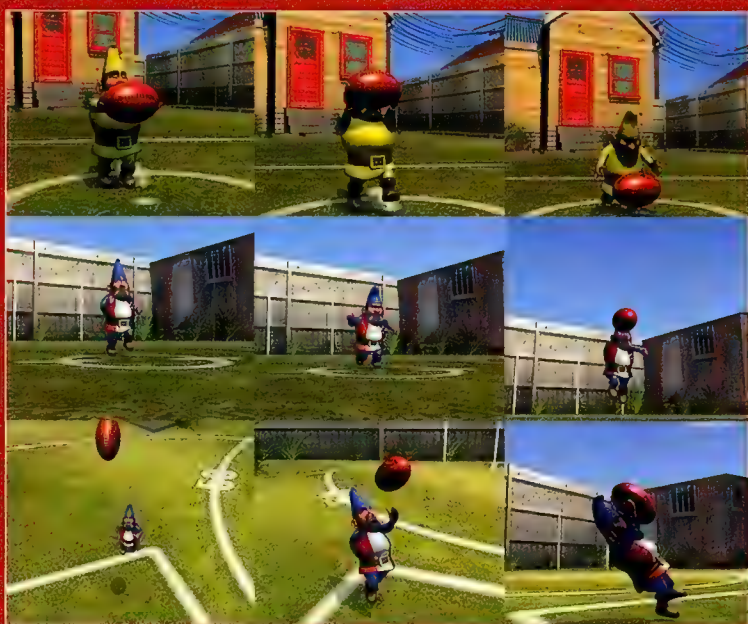
With so many developers based here, the work is definitely available and the best way to get it – like with any sort of job – is through a combination of education and experience. Remember that you're competing against a lot of people, so you need to do everything you can to stand out from the crowd.

GAME DEVELOPMENT 101

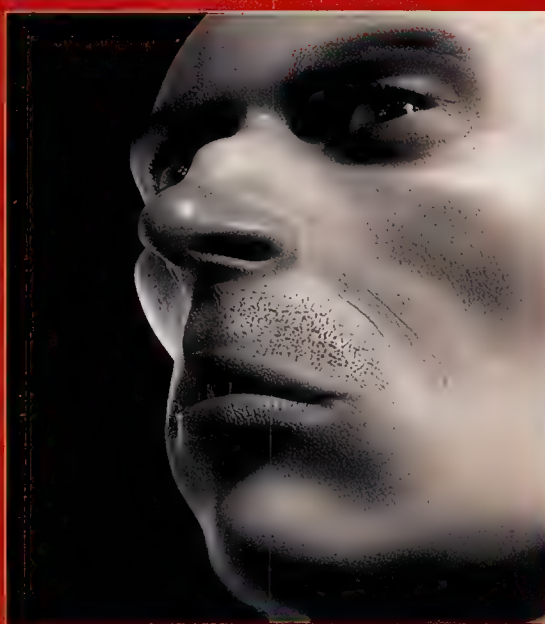
'I would definitely recommend a professional education,' says Peter Jarrett of Gridwerx, a Queensland-based indie developer. 'Sure, some of the subjects may seem a little fluffy and not to your liking, but I've found that those who were formally studying and working alongside other students were more talented and likely to learn faster than someone "self-taught"'



Sourì's Sumea Launchpad is a popular resource for local developers and institutes.



Some work from students of the AIE.



or "interested in making games" with no formal experience or education. In recent years, more and more tertiary institutions have started to offer courses specialising in game development. We're not just talking about places like the AIE and QANTM either, but mainstream TAFEs and universities too.

This doesn't mean that 'traditional' qualifications are useless. Brodersen sees a lot of value in arts and computer science degrees if you're interested in working as a modeller or programmer.

At present, Charles Sturt University, La Trobe University, Murdoch University, Queensland University of Technology, RMIT and the University of Tasmania all offer game development majors or units as part of their existing computer science programs. Contact your relevant institute to find out more information.

Graham Edelsten from Auran believes that the more specialised your qualifications are, the better. 'The student must finish their course understanding the fundamentals of game design. They won't get this from the more general multimedia courses.'

We're not going to tell you which game development course is the best because, frankly, there isn't one – it all depends on what you're after. All we can really suggest is that you take your time deciding, being sure to carefully weigh up factors like campus location, course duration, cost, staff experience and the kind of prior knowledge or experience that's required.

Despite what some people might tell you, don't automatically discount the TAFE courses. 'We hire graduates from all institutes,' says Tom Crago. 'We have some great TAFE graduates working for us.'

The Academy of Interactive Entertainment

www.aie.act.edu.au

With campuses in both Melbourne and Canberra, the AIE is known for its elaborate promotional booklets and, more importantly, its close relationship with developers like Big Ant, Irrational, IR Gurus, Microforte, Tantalus and Torus.

Students of the AIE regularly get the chance to meet and learn directly from industry figures. On top of that, many of the staff boast a considerable amount of real world experience themselves.

In terms of qualifications, the AIE offers a number of short introductory programs as well as two Certificate IV courses specialising in programming and animation. Bear in mind that if you want to study programming at the AIE, you'll need some prior knowledge of C++ and will have to sit an entrance exam. Likewise, prospective animation students will need to submit a folio containing at least five pieces of original work.

Once you've completed one of the Certificate IV courses, you'll be able to study for another year to earn the Diploma in Computer Game Development. In the near future, the AIE plans to introduce an Advanced Diploma.

Dylan Bray, lead artist at Big Ant Studios, is a former student of the AIE. '[My time there] was great. The tutors were very helpful and there was a lot of scope to push myself to do my best work at the time. Having done amateur mod work before, it was definitely suited to stepping up to a more professional level of 3D artwork.'

While Bray's experience is quite encouraging, there are still a few potentially off-putting things about the AIE. For starters, their courses – particularly the Certificate IV in programming – require prior experience. They're also quite specialised – some of you might enjoy that, but if you're not 100% sure about what you want to do in the industry it could be an issue.



The AIE's tutorials are designed to emulate a real development studio.



Students at QANTM are encouraged to flesh out their ideas on paper.

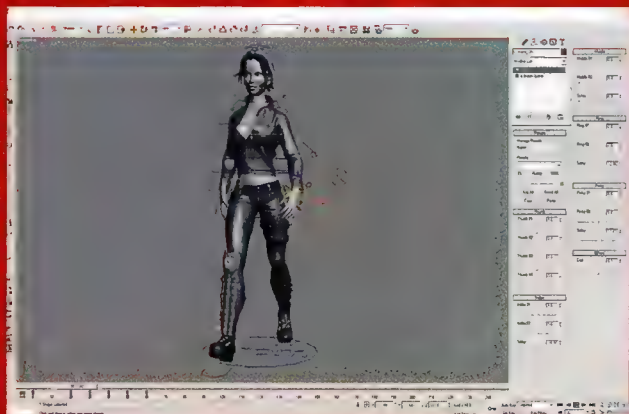
QANTM College www.qantm.com.au

QANTM offers two game-development-related courses – the Diploma of Information Technology (Game Development) and the Bachelor of Interactive Entertainment. At the moment, you're able to major in either programming or animation, but in the near future you'll also be given the option of studying game design. Whatever major you choose, you'll also be taught some general skills such as business compliance, project management and scripting.

Many staff members at QANTM have worked for developers such as Pandemic, Krome and Fuzzy Eyes. Others have worked in film and television, producing advertisements and animated children's shows.

While the Bachelor doesn't require any prior experience, it's recommended that you at least spend a bit of your free time familiarising yourself with programs like Maya and 3DS Max.

As you'd expect, all of this comes at a price. The Bachelor will set you back \$15,500, although there are scholarships available and you can get student loans through the National Bank. Before you apply, ask yourself if developing games is what you really want to do. If you have any doubts, perhaps you'd be better off sticking to one of the TAFE courses.



From paper to 3ds Max8: a sample of what gaming students can concoct.



This year, USQ opened a new games and multimedia laboratory.

Southbank Institute

www.southbank.tafe.net/course/DOM/CUF50701-4.htm

Queensland's Southbank Institute of TAFE offers the year-long Diploma of Multimedia (Games Development). While it's obviously not as intensive as the Bachelor of Interactive Entertainment, it will provide you with an introduction to many aspects of game development and design.

In the first semester, you'll learn the fundamentals of After Effects, C++, Character Studio, Director and 3DS Max. In the second, you're able to specialise in something a bit more specific.

The learning environment at Southbank Institute is designed to emulate a real games studio as closely as possible. During the year, students apply for a 'job' at the in-house developer, Studio Kaboom. If their application is successful, they get to work on a game that eventually gets published by a small-edutainment company.

While only a few staff have actual industry experience, Southbank Institute works closely with developers such as Krome and Fuzzy Eyes to ensure that its teaching material is relevant and current.



Game development students relaxing at USQ. Where's the coke & pizza?

University of Southern Queensland

www.fit.qut.edu.au/courses/undergrad/majordescriptions.jsp#GT

This year, USQ added the Bachelor of Information Technology (Games and Creative Technology) to its existing line-up of computing courses. Students can choose to major in either programming or graphics, although everyone has to study the fundamentals of high performance numerical computing, object-oriented programming, physics and writing.

While only four staff members have industry experience, the teaching material is based on the recommendations of the International Game Developer Association (www.igda.org), of which lecturers David Boreham and Dr. Penny de Byl are members.

Victoria University (TAFE)

multimedia.tafe.vu.edu.au/mmsite/games_development.htm

As of 2005, Victoria University (TAFE) has offered students the Advanced Diploma of Multimedia (Games Development). Much like Southbank Institute, Victoria University hopes to provide its students with an understanding of many different aspects of game development, including animation, coding, engines, interactive storytelling, level design, machinima, project management and texturing.

While the idea of studying all of these things might leave some of you a little cold, it's great for those of you who aren't exactly sure about exactly what you'd like to do in the industry. First year student Aaron Styles agrees with this view. 'From what I see, the course isn't designed to get us into a job. It's more of an overview of what roles we could undertake in the games industry. Looking at it from that perspective, the lack of specialisation could be a good thing.'

Compared to some of the other courses we've looked at, the Advanced Diploma of Multimedia (Games Development) is very affordable. While none of the staff have any industry experience, course planners work closely with the industry. Whichever qualification you choose to undertake, it pays to remember that your learning shouldn't stop when you leave the



The Advanced Diploma of Multimedia (Games Development) is offered at Victoria University's Flinders Street campus.

classroom. Brodersen says, 'If you want to work as a programmer read all the books you can get your hands on about games, software design and game design. If you want to work as an artist, work in your spare time on modelling and texturing.'

Read all the books you can get your hands on about how to model game characters and other game assets. Also read everything you can about game design. If you want to work as a designer, [read] everything you can get your hands on about game design. Analyse as many games as possible (I'm talking about analysing games, not just playing them).'

IF YOU WANT
TO WORK AS A
PROGRAMMER
READ ALL THE
BOOKS YOU
CAN GET YOUR
HANDS ON...



YOU'RE GOING TO HAVE TO DO A LOT MORE IF YOU WANT TO STAND OUT FROM THE CROWD AND GET A JOB.

BUILDING A RESUME

While all of the courses we've covered emphasise practical experience, you're going to have to do a lot more if you want to stand out from the crowd and maximise your chances of getting a job.

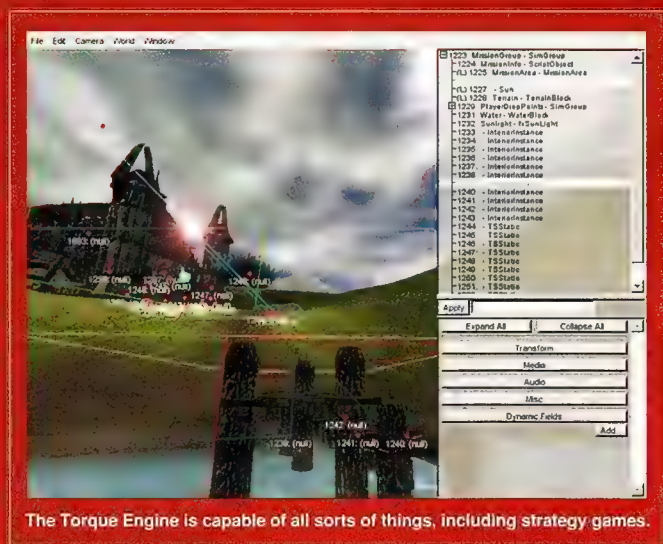
Although you can bolster your résumé with a series of simple demos or by entering contests such as Sumea Launchpad's annual modelling challenges (www.sumea.com.au/forum/topic.asp?TOPIC_ID=3662), having your name in the credits of a mod or indie game can be very impressive.

'The mod and independent game scenes are really important,' Brodersen says. 'Working on a mod [or independent game] is as close to doing the real thing that you can without actually having worked for a game developer. If you can demonstrate a number of achievements having worked on a mod [or independent game], then it will give an employer a lot of confidence in your skills.'

Crago agrees. 'We really like people who've spent time on their own game projects outside of their course of study.'

Whether you develop a mod or standalone is up to you – both have some fairly clear advantages and disadvantages. '[Developing your own game] is completely different from a mod as you're building it all from scratch,' Jarrett says, 'even with an engine as a foundation. It gives you a far deeper appreciation and education than modding skins and scripts for an existing game, but on the downside it takes far longer and [you generally] don't get to play with the latest engines if you're on a limited budget. It's hard work. Don't think that making a game is all beer and skittles. It takes a long term and a lot of people to build a game. [Mods involve] less effort, but if you want to build [a game] from the ground up there's a lot of hours from a lot of people to make it happen.'

'It still costs money,' he says. 'Even if you're bootstrapping and working in a garage, there are still a lot of costs associated with licences, tools, servers, hosting, beer, pizza, travel and marketing. If you're serious about it, you need to have some funding behind you. I'd put aside \$10,000-\$25,000 collectively for a demo or prototype for legal, marketing and so on just as a bare minimum. It will cost you a lot of hours, brownie points with loved ones, a slice of your sanity and a sacrifice to your health and social life to get it off the ground.'



The Torque Engine is capable of all sorts of things, including strategy games.

TALK THE TORQUE

While developing your own game is generally an expensive exercise, it's possible to at least get a decent engine relatively cheap. The Torque Engine – which was used in Tribes and Tribes 2 – is incredibly popular with indie developers and will only set you back US\$100.

With support for Windows, Mac and Linux, the Torque Engine SDK includes the full C++ source code, a world editor, GUI editor, terrain editor and extensive tutorials and documentation.

You can find get more information and a free demo here: www.garagegames.com/products/1.

Alan Wilson says, 'Begin with an aim or a target. Start with the germ of an idea, then flesh it out a fair bit with one or two friends before you bring a whole team together.'

Bear in mind that your idea doesn't need to be complex to impress your potential employers. '[You can do] a puzzle game or a series of puzzles.'

says Graham Edelsten. '[The main thing is that] the player keeps going back each day, wanting to play again. The graphics must be good as well.'

Whiley agrees. 'In today's industry, appearance is everything. You are better off doing a small mod or demo that looks terrific than something more ambitious that doesn't look quite as good. Graphics really, really matter.'



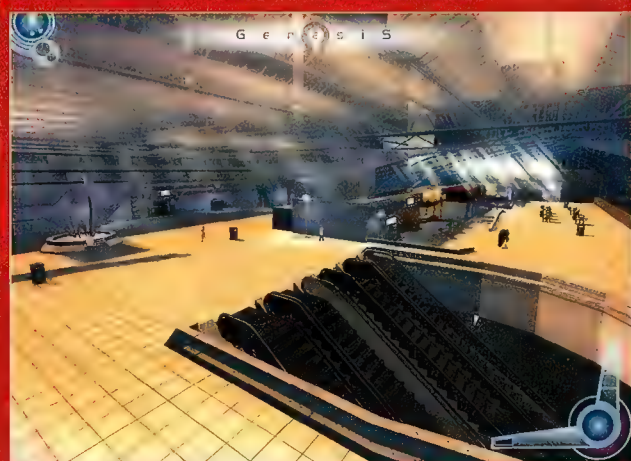
The Gridwerx team at work.

If you're not an artist, get yourself connected to the best artists you know. Bribe them with beer or whatever it takes, but get the best possible graphics for anything you're a part of.'

Forming a team shouldn't be too hard if you're in a game development course, but if you've finished or are yet to begin your studies you can try sites like GarageGames (www.garagegames.com) and ModDB (moddb.com). '[Ideally you'll have a team of] people you know or who are recommended to you,' says Wilson. 'Of course, you'll have to take a flyer with untried people. Some will work out and some won't. And just start at the beginning. [Do things] in simple steps and stages that everyone can understand – then step up the pace and the challenges.'

'Expect team attrition,' says Jarrett. 'If you're bootstrapping a project part-time, people still have to make time for their bread and butter jobs and family commitments. You have to expect that team members will burn out along the way. Expect a lot of pain and hard work, but equally expect an exponential learning curve. Whether you succeed or fail, you will certainly come away with a far greater knowledge and appreciation of the massive effort that goes on behind building a game and hopefully a network of friends and contacts who you will keep in touch with for life.'

When it comes to being recognised by developers, Wilson believes that you need to prove you're capable of producing something that appeals to gamers. 'That needs marketing and PR,' he says. 'Sites like the great ModDB. Push yourself out there – don't spray too much bullshit around, but be prepared to sell yourself, your work and your idea. If you don't do it yourself, make sure you've got someone on the team who can be the public face – there's usually no shortage of egos on the team. You have to build a following or it simply isn't going to happen. ModDB has 3579 mods on a quick glance, so you've got a lot of people to overtake. Talk to people a lot, be active on the forums related to your technology, the genre and the content material. And be nice about it – no one likes a smart arse!'



Gridwerx's current project, Genesis.



Tripwire Interactive's UT2004 mod, Red Orchestra, won Epic's Make Something Unreal contest.

SIGH HERE, HERE AND HERE

Whether you're working on a mod or a standalone game, teams can get ugly. We spoke to Alan Wilson from Tripwire Interactive, the team behind the award-winning Red Orchestra mod for UT2004. 'We always suggest to people that they get some form of contributor agreement signed up before each person starts. It sounds really boringly corporate, but it'll save nightmares later. Make sure the team owns everything produced or it'll be hell if someone stomps off in a hissy fit and tries to take their toys with them.'

GETTING THE JOB

When it comes time to apply for a job, Brodersen has some advice. 'Put together an excellent CV and email it to the CEO of the developer. The email address can usually be found on the company website. Remember that [he's] a busy guy, so he'll [spend five seconds] at most [scanning] your email before deciding whether he's interested or not. Have about five bullet points summing up exactly why you would be valuable to his company (your degree, practical experience, etc). If you're an artist, make sure the email includes a clear and obvious link to a website with your portfolio. If you're a programmer and have worked on a mod [or independent game], make sure there's a link to an impressive website. Make sure your name is on the team member list. If you haven't heard back within a week, [contact him to ask if] he's received the email.'

By now you've either been discouraged from getting into the games industry or are keener than ever before. If it's the latter, all we can say is good luck and don't give up on your dream.

'Developing games is hard work and it takes a lot of skill to do it at a professional level,' Brodersen says, 'but if you do accept the challenge then go for it because for people with the right interest and work hard attitude, developing games is the best job in the world. Nothing else comes close.'

Atomic would like to thank the following people, developers and institutes, without whom this article would not have been possible: Aaron 'Charcoal' Styles, AIE, Alistair Doulin, Auran, Dylan Bray, Gridwerx, Logan Rapp, QANTM, Southbank Institute, SSG, Sumea, Tantalus Interactive, Third Wave Games, Tripwire Interactive, University of Southern Queensland and Victoria University.

Tai-Chi Thermaltake

the Next Generation PC ...

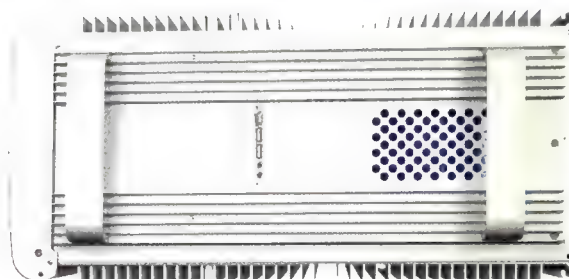
Thermaltake
COOL ALL YOUR LIFE
www.thermaltake.com.au

• Liquid cooling system application



VB5001SNA

• the Aluminum Extrusion Case



Model	Tai-Chi --- VB5000SNA
Case Type	Super Tower
Net Weight	17.1 Kg
Dimension	600 x 263 x 546 mm (H*W*D)
Cooling System	<ul style="list-style-type: none"> •Front (intake) : 120 x 120 x25 mm blue LED fan, 1300rpm, 17dBA, •Rear (Exhaust) : 120 x 120 x25 mm blue LED fan, 1300rpm 17dBA.
Drive Bays	11
-Front Accessible	Up to 10 x 5.25" , 1 x 3.5"
-Internal	3 x 3.5"
Material	Aluminum Extrusion
color	Silver & Black
Expansion Slots	7
Motherboards	Micro ATX, ATX, Extend ATX, BTX, Micro BTX, Pico BTX
BTX upgraded kits	SRM / Rear plate (option)



NSW Office

☎ (02) 9648 0888

Fax: (02) 9648 0999

VIC Office

☎ (03) 9543 1888

Fax: (03) 9543 1000

QLD Office

☎ (07) 3852 5288

Fax: (07) 3852 5299

VB5000SNA

the Aluminum Extrusion Case with Liquid Cooling System

technique

Hands-on tutorials, tips, and tweaking for the technically inclined.

Virtualisation entering the home market is going to be a great thing. Although we're still waiting for AMD to play catch up, Intel's VT is already here, and we're just waiting for the software to arrive to take full advantage of it.

Apple users have already had their first taste – Parallels Workstation quite happily taps into the underused second CPU core to run whichever OS the user desires at near full speed – well, except for the 3D accelerator – but hopefully that will come soon enough.

The benefits of virtualisation are quite far reaching – Linux and OSX pundits won't have to reboot into Windows just to play a game – they can just load VMWare, Virtual PC or Parallels, boot their save state high on instantly and start playing, at only minimal performance loss (once again assuming the video card acceleration problem is addressed). Next to Apple's move to x86 architecture, it's probably the single most platform unifying movement made by the tech industry so far – how or if this affects the cost of OS software remains to be seen.

Imagine a machine that is running both a Windows workstation, but also a Linux server underneath, transparent to the end user (you can do this now for free, by the way, using Microsoft or VMWare's free server products). This could also function as a virtual file server, so 'backing up your machine' literally means splitting and burning off the one image file. An entire

machine could be taken to your friend's place by bringing no more than a hard drive – and suddenly it's on the network for everyone to see and interact with completely separate of their machine. Of course, all this is possible now – but at a significant speed penalty. Virtualisation should fix that nicely.

We can then expect to see certain sandboxed applications start coming out as well, in their own little contained environments – some good (isolated browsers, protecting your machine from nasties) and some evil (standalone DRM infected virtual machine movie players will surely happen at some point).

At the far, far end of the probability scale, games could actually be released running on their own OS, dynamically rerouting calls from the virtual machine to native hardware, making them ultimately platform independent. Sadly, this is unlikely thanks to the complexities of such a project, but it's a tempting thought, isn't it?

Heck, I could be wrong. Virtualisation may never take off in the home market! People may continue to be separatist and elitist about their OS of choice and, let's face it, games will keep crashing thanks to hardware compatibility issues. But wouldn't it be nice?

Craig would rather be a pirate on Scabb.
csimms@atomicmpc.com.au

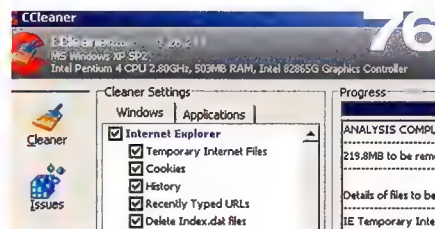


this month



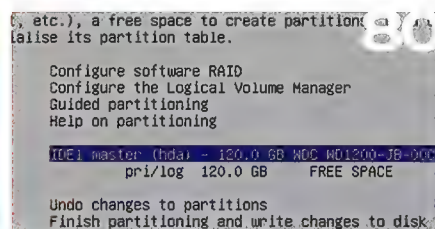
▲ Patch

Like a quilt of random woven bits over a ghost, Patch emerges from the shadows.



▲ Windows

Give Windows the spring clean it needs to bring it back up to speed.



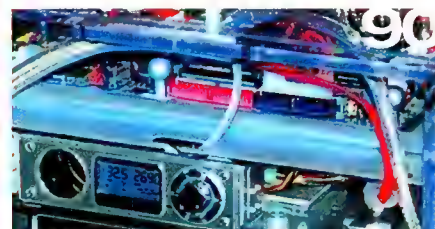
▲ Linux

Vas is das? Ze Über Linux Box Returnen? Zeitgeist!



▲ Hardware

Ron Prouse is a stealth ninja, so it makes sense that his drives are too. Possibly without the ninja.



▲ Hotbox

This is Boximus Prime, Autobots, transform and roll out!

DO YOU NEED HELP?

Stuck? Always wished you could achieve something but didn't know how? Wish you had a handy guide just sitting there to dig you out of a hole? Need new jeans? We can help on all but the last. If you have an idea for our monthly tuts, why not drop Craig a line on csimms@atomicmpc.com.au. Or alternatively you could just write to him, if you're not the line-dropping type.



tinytweaks



Microsoft Update



Okay, so Microsoft is getting all Draconian about Windows Genuine Advantage, updates and the like, to the degree that it's become nagware, even free software is getting locked down and pirated versions of Vista will have features turned off. But for those who have coughed up the shekels for a legit copy, instead of Windows Update, there's also a generic Microsoft Update – which, funnily enough, can be found at update.microsoft.com. This covers other Microsoft products as well as your operating system, making sure that all your shiny MS apps are up to date and purring along nicely. Get your system patched today!

Perfection sand



Sanding is the mechanical process of scratching a surface evenly until it has a uniform appearance – the key word here is 'evenly'. If the surface has existing scratches, then the obvious starting point is to erode the rest of the surface to that same state. To achieve a really smooth finish, the entire surface has to be removed until it is level with the lowest existing point... if there is a 1mm deep scratch then the whole surface will need to have 1mm removed to negate the imperfection. In most situations, this just isn't viable! The answer is to use a filling compound, something that will fill any scratches to level of the surface around it. The type of filler used will depend on the type of material that is being worked on, but for most plastics and metals that are going to be painted, a quality two-pack body filler, such as Davids P38 from Permanent Painted Coatings, will give the basis for a perfect mirror paint finish.

Keyboard shortcuts



Using the extra keys that modern keyboards always seem to have under Linux used to be a chore, but on recent versions of GNOME they're very easy to set up. Open the 'Keyboard Shortcuts' settings from the desktop's Preferences menu to reveal a list of actions that you can assign those keys to, from controlling your sound volume to ejecting your CDs.

Click on an action and then press the appropriate button to make the assignment. You can even use key combos that use your standard keys, in case you run out of extra keys.

patch

Be up to date with the up to date

MODLIGHT
The Hidden – Half-Life 2 mod
www.hidden-source.com

When do too many bugs get in the way of excellent gameplay? The Hidden is a shining example of this quandary – while it's got more critters than a British backpacker's lodge, they're still not enough to stop you from having just one more round.

Taking a transparent leaf out of Alien Vs Predator 2's book, The Hidden is more like a game of hide and seek with machine guns than a standard run and gun fest. This online Half-Life 2 mod sees participants split into two teams. One player takes the role of the Hidden, a genetically modified human on the run, with the handy ability that he's almost invisible. Think the Predator's cloaking ability, and you'll have a pretty good idea of how hard it is to spot this guy in the mod's dank and dark levels.

The Hidden can leap around 20 feet, and cling to surfaces for a short period of time. Health packs for this guy are replaced with the ability to chow down on the corpses of your fallen enemies, which can also be artfully pinned to walls and floors to give the other team the willies. Balancing out his superhuman abilities is the fact that he's only armed with a knife for killing and pipe bombs to flush out corner campers.

The Hidden has to face off against a team of soldiers armed to the teeth with high powered weaponry, yet the soldier's most important weapon is the flashlight, penetrating the murky depths of the nooks and crannies that make such cozy hiding spots for the Hidden. Successfully kill the Hidden and you get to take his role in the next round.

Remember the scene in Predator where the soldiers fire blindly into the jungle, with Mac manning the chain gun? This scene is replayed time and time again while playing The Hidden. One grunt will think he's seen the Hidden and start firing. Before you know it, every other trooper is firing blindly in the same general direction, giving the Hidden a great opportunity to sneak up behind somebody and stick them in the neck. As a grunt it's incredibly tense and spooky, while being the Hidden offers a sense of satisfaction rarely seen in online games.

For all of its brilliant gameplay, it's still in beta and the bugs can be annoying. Most offensive of all are the show stopper server bugs which sometimes screw up the team join facility. However, these bugs don't pop up often enough to stop the Hidden from being a Half-Life 2 mod that you simply must download as soon as you've finished reading this gushing article. Go forth and download!



patch of the month updates that matter

BF2 1.22 patch

With the recent release of the incremental 1.22 patch for BF2, virtual soldiers have been dismayed to see that anti-air has been tamed down from the 1.21 patch. Without a decent pilot on your side, you're once again a walking pile of gibbs just waiting to be carpet bombed. However, a few bug fixes and the nerfing of the PKM are all welcome inclusions, but until something is done about the AA, infantry maps are still going to be the favourites.



antisearch things you should never type into Google Image Search

Oh dear. Although mixed with the results of Johnny Depp and milk cocoa, type in 'chocolate' without the safety of the letter 'e' and, depending on your browser settings, you may be blessed with a new understanding of the word.



"Chocolat"

quote of the month learn from the masters

"Technology is a word that describes something that doesn't work yet."

— Douglas Adams

distrowatch where it's at in the world of Tux

Distribution	Stable	Beta	Website
Ubuntu	5.10	6.06	www.ubuntulinux.org
Debian	3.1r2	sid	www.debian.org
SuSE	10.0	10.1rc2	www.opensuse.org
Fedora Core	5.0	core-dev	www.fedora.redhat.com
Mandriva	2006	cooker	www.new.mandriva.com
Gentoo	2006.0	2006.1	www.gentoo.org
Knoppix	5.0	5.01	www.knoppix.com

powertools

Belarc Advisor
www.belarc.com

Sysinfo extreme, checks antivirus/security patches are up to date, displays hardware & software installed, a plethora of other stuff – if you want to know your system backwards, this is the tool for you.



x86info
www.codemonkey.org.uk/projects/x86info

Provides in-depth CPU information, with a bunch of tidbits not found in /proc/cpuinfo. The MHz reporting is particularly handy when diagnosing CPU frequency scaling problems.



members.cox.net/brutal/
Resistor/main.html

Wiring up LEDs can be daunting, requiring the punter to delve into the mysterious and alchemic world of resistors, with their confusing little coloured bands. This site will help become a LED master!



Atomic v2.5

SITES OF THE MONTH

Annoyances
www.annoyances.org

If you need to find out if your problem with Windows is unfixable, this is the place to go.

Mactel Linux
www.mactel-linux.org

Want to run Gentoo on that shiny dual-core MacBook Pro, or MythTV on a tiny Mac Mini? Mactel Linux has guides and kernel patches to get you up and running.

Permanent Painted Coatings Australia
www.ppc.au.com

An excellent site for hotrod and show car builders, hobbies not that far removed from our own!

Cleaning your Windows

Craig Simms pulls out the Jiff and gets scrubbing.

As any geek should know, a clean system is a good system – the more bogged down with useless stuff your machine is, the slower it will go, eventually ending in the downwards spiral that is 'Windows Rot'. You system will become more and more debilitated until the only thing that can fix the myriad problems is a complete reinstall. But rather than go through the rigmarole of starting again with a clean system, we've decided to see if you can inject some lemony fresh goodness into your machine by doing a bit of spring cleaning.

Atomic is here to help.

Keep it safe

The first step to cleaning out your system is to start in Safe Mode – allowing you to get at some of the more protected areas of Windows that are usually inaccessible. If you have offsite resources, it's probably a good idea to start Safe Mode with Networking, unless your network driver is what's causing the issue in the first place!

Space – the final frontier

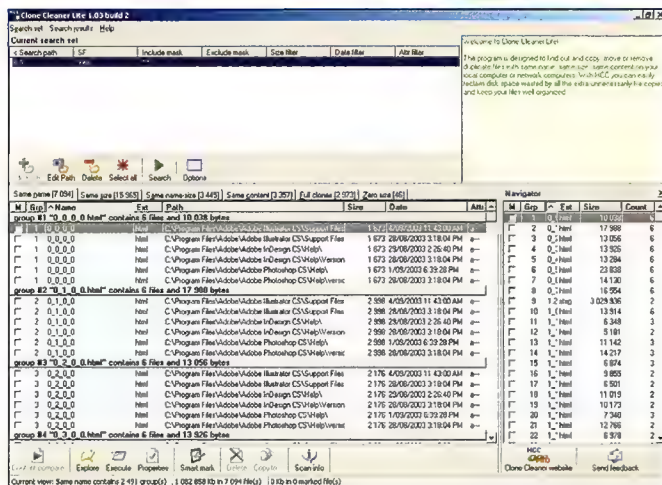
When Windows loads the next step, however obvious, is to open up the Add or Remove Programs dialog and remove any unneeded programs. You'll be surprised what has accreted over the last few months. While you're moseying around the Control Panel, probably a good idea to check that any unwanted services aren't running, as well as check if any hardware is having problems in the Device Manager.

Now we want a handy little program by the name of SpaceMonger, available at www.werkema.com/software/spacemonger.html.

SpaceMonger will give you a graphical representation of how big files or folders are on a certain hard drive – revealing things such as those folders filled with half finished torrents that you forgot about months ago, which should have been deleted. Simply hover the mouse over the folder/file name to get a tooltip telling you where it is. You can even zoom in on a particular folder to view the contents of it, by right clicking on the name and choosing, funnily enough, 'Zoom In'. You can also delete or open files/folders directly from SpaceMonger through the right click menu, making it the one-stop file cleanup utility. The bigger the application window is the greater the detail too, so those with huge resolutions will benefit greatly.

A small warning – using SpaceMonger may lead to some serious grunt work, getting you seriously hooked on moving files about, compressing and organising your data, possibly to the extent of setting up a RAID 5 fileservers and making sure your PC is filled with system and game installs only, just so everything is as lean as possible and neat and in place. Don't say we didn't warn you.

One thing SpaceMonger won't help with is tracking down duplicate files, or 'dups' as they're affectionately known. Clone Cleaner Lite (www.clonecleaner.com) will help in this regard, or if you're Sourceforge-biased DUFF (dff.sourceforge.net) also does very well.



▲ Clone Cleaner Lite will help track down annoying dups.

You may also wish to sort through and organise your MP3s using The GodFather (users.otenet.gr/~jtcliper/tgfr) or hunt for image dups with D'Peg (www.somewareonthe.net) – note however that the last program is not free. However, it is the best tool for searching through all your images to turn up dups – even picking up clone images that are at lower resolutions or quality settings so you can weed out the excess. For those who have to keep it free, the unwieldy DupDetector can be found at www.prismaticsoftware.com/utility/utility.html.

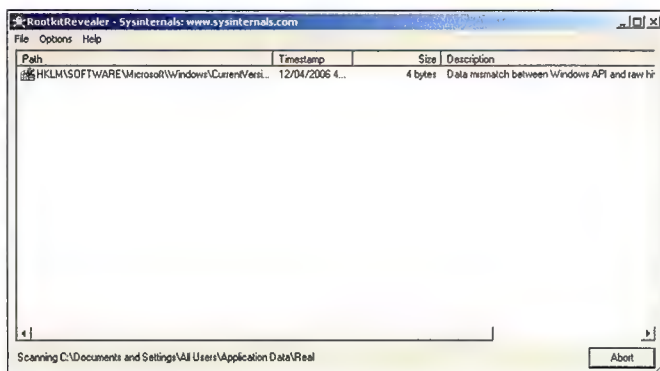


▲ Oh yeah, watch that baby mong some space.

Take the opportunity now to burn off everything you can, using something like DiscLib (www.lyrasoftware.com/disclib) or WhereIsIt (www.whereisit-soft.com) to catalog as you burn.

Taking out the trash

Next, a spyware and virus check is wise, to clear out any potential nasties that may be sending your data elsewhere, let alone slowing down your system – AdAware, Microsoft Defender, Spybot Search and Destroy are your friends here, along with a virus checker of your choice (F-Secure, Kaspersky, Norton, Avast, Antivir). A rootkit check is also a good idea, with Rootkit Revealer (www.sysinternals.com/utilities/rootkitrevealer.html), F-Secure BlackLight (www.f-secure.com/blacklight) and IceSword (xfocus.net/tools/200509/1085.html) being the weapons of choice.

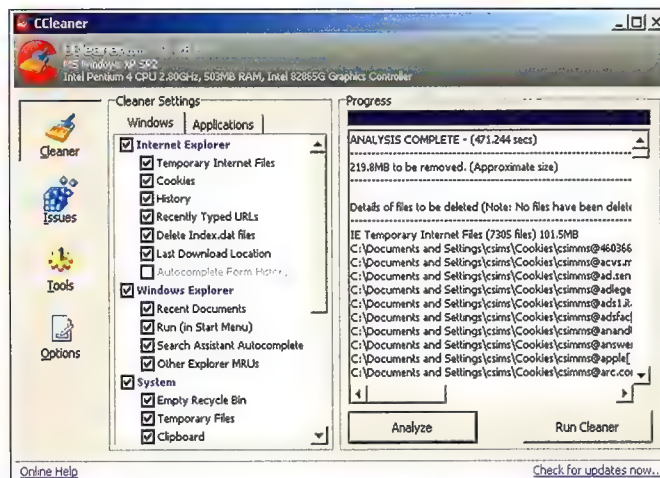


▲ You really don't want to be rooted.

Now we want to check out everything that is starting with our system, to see if we can cut down on the boot time – go to Start -> Run, type msconfig and hit OK. Here in the Services and Startup tabs we can see almost everything that is being requested to boot with the system on startup. For a more comprehensive solution, try HijackThis! from www.spywareinfo.com/~merijn/downloads.html, but make sure you know what you're doing before you go removing random strings!

Let's clear out all our accrued temporary files created by our installed programs. Head on over to www.ccleaner.com and install Crap Cleaner – making sure to uncheck the ironically included crap, the Yahoo Toolbar. Note that you can either Analyse (if you want to see what will be deleted first) or simply just run the cleaner on the checked Windows components or applications.

The issues subsection on the left is also a good little tool that allows you to hunt down obsolete registry keys, missing shared DLLs and a number of other tidying functions.



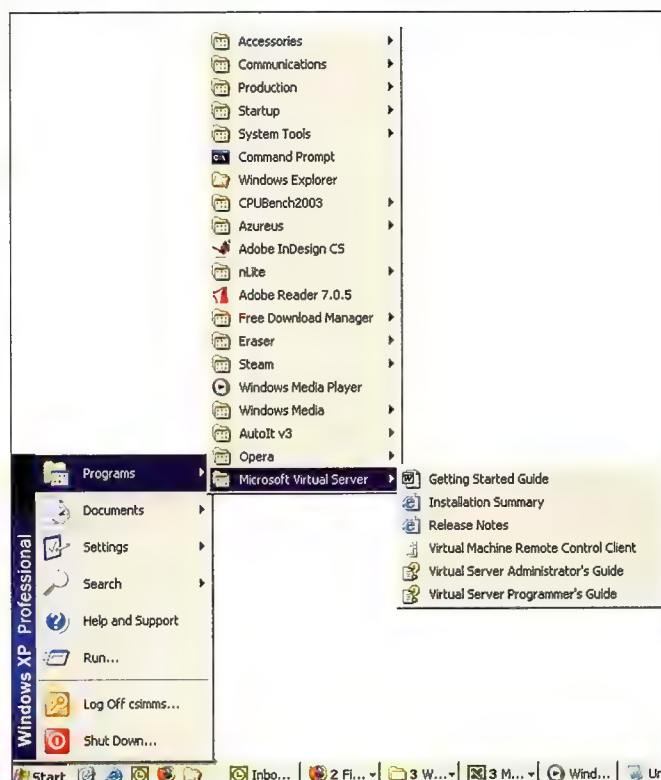
▲ More effective than a toilet brush at cleaning crap.

Finally, the tools subsection allows you to check out the startup registry keys, and rename or delete troublesome entries in your Add or Remove Programs dialog.

Self help

Now that we've dealt with the excess and possibly nasty files on your PC, it's time to do something that only you can do properly, and no program will help – clear all the rubbish off the desktop, and organise your now monolithic and no doubt quite broken Start Menu. You'll be amazed how easy it is to find things once order has been restored. Categorising into areas like 'System Tools', 'Multimedia' and 'Production' really does help! Don't bother with moving things through the Start Menu itself, it's tedious, often doesn't respond and won't update properly after you move your first item – instead hit up yours and the 'All Users' profile directly in Explorer by browsing to C:\Documents and Settings and perusing the appropriate Start Menu subfolder.

In the spirit of organising, grab TweakUI from www.microsoft.com/windowsxp/downloads/powertoys/xppowertoys.mspx and have a browse through the options, paying particular attention to items that may be in your Control Panel, and pruning the items from the 'New' context sensitive menu by going to the Templates subsection.



▲ Didn't your mother ever tell you to clean up your Start menu?

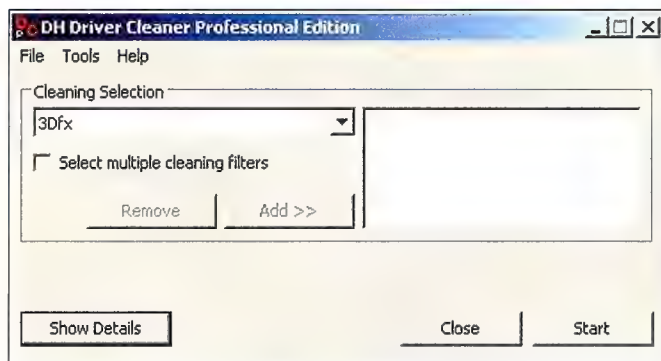
System enema

At this point you'll want to create a System Restore point. Yes, we know a lot of you have turned it off, but in our experience it's been an amazing saviour of so many extreme system frack-ups that it's worth the extra space it takes up. By default, you'll find it in the Accessories -> System Tools subfolder of your Start Menu, but you can also access it by going to Start -> Help and Support and choosing the third option from 'Pick a Task'. Go through the steps explained on screen to create the System Restore point.

We're almost done! Now we want to clean out our old drivers. There's potential for wrong things to happen here, which is why we created the System Restore point earlier. Firstly, grab all the new drivers for your software, and store them somewhere accessible like on a USB key – you don't want to have to download them again or go through the fuss

of hooking your hard drive up to another system to retrieve the files if things go fubar.

Head to www.drivercleaner.net and download DriverCleaner Professional Edition. Check the 'Select multiple cleaning filters' box, select which drivers you most likely have installed on your system from the drop down box, and click the Add button to hunt for and remove the selected drivers. Once you've selected everything, click Start. Once it's done, restart your computer and hold your breath. If everything is fine and dandy, Windows will start and will prompt you for a whole bunch of driver installs. If not, you'll need to start in Safe Mode and run System Restore. Assuming all is good, set up as required to get your system all spiffy and fresh.



▲ All this cleaning is making me thirsty.

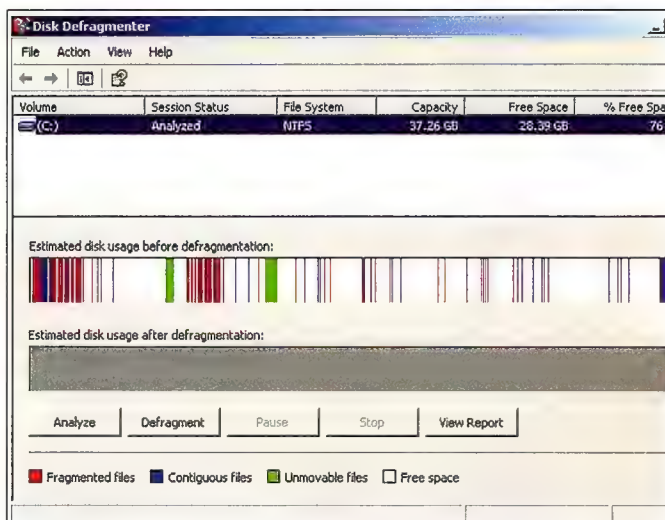
Check that all your programs are updated, downloading and installing where necessary (especially your firewall and antivirus definitions), then hit Windows Update and get your system, well, up to date. Finally, if you want to be a little more secure, cycle your passwords.

Platter polishing

You may at this point wish to scrub your system if you're particularly paranoid. Grab Sure Delete from www.wizard-industries.com and

run SD Disk, set it to something insane like nine passes, and watch as it slowly scrubs the empty space on your hard disk of any evidence of files ever being there by overwriting it with useless data.

There's one step left – the venerable old defrag. You can either use the Windows default defrag or grab a demo of OO Defrag or Raxco's Perfect Disk for quicker results, but on a 30-day trial. Depending on the amount of storage you have, how much is occupied and the speed of your PC, this may take a while – so if your drive is full and your PC particularly slow, leave this until you can run it overnight.



▲ How long since you've defragged? The ol' faithful still has a little impact.

Shiny

Your PC should now be a damn sight faster, the hard drive no longer struggling and lag times cut down significantly. And hey, while it will never be as good as the inevitable reinstall, hopefully it will put it off for that little bit longer.

Recovery

Sometimes, Windows gets borked almost to the point of no return – it no longer boots, and complains about some files missing. Rather than reinstalling, you can make one last ditch attempt to repair the installation.

You could attempt the automated way (assuming that the install CD can detect your installation correctly), boot off your Windows XP CD and choose to repair your installation – simply press Enter on the 'Welcome to Setup' screen, select your partition and hit 'R' to start the process. This will recopy over all the Windows system files, and should leave all your documents intact. In the best case scenario, all your files are left intact, and maybe a few installed programs won't work. Worse case scenario, blue screen city as version mismatches and driver conflicts send your machine to hell.

The other option is the recovery console, and attempting to fix things the hardcore way.

Once again you boot off CD, but rather than hitting Enter on the 'Welcome to Setup' screen, hit R, and be prepared to enter the administrator password. This way is much more useful for when files like NTLDR or NTDETECT.COM get corrupted or go missing. You can boot into the

recovery console, then simply copy them from CD by typing `copy d:\i386\NTLDR C:` and then `copy d:\i386\NTDETECT.COM` (assuming d: is your DVD drive).

If you have a boot.ini issue, you can rebuild the file – if it already exists, delete the file, then type `bootcfg /rebuild`.

The recovery console will then scan for your Windows install. If it finds it, it will ask you if it is to be added to the boot list. Hit Y if everything is dandy. Next you'll be asked to enter the 'Load Identifier' – this is what the installation will be called in the boot menu.

You'll be asked for boot options next – just type `/fastdetect` for the default options.

You can also run `fixboot` and `fixmbr` from here if you get further problems.

There are plenty of other good commands here like `disable` and `enable` which control services, and if you're clever enough with the `expand` command and know your CAB files, you can even replace drivers.

You can also add the recovery console to your boot menu if you like, although it requires the copying of files to your hard drive and a working Windows installation – just open up a command

prompt, type `d:\i386\winnt32.exe /cmdcons` (where d: is your DVD drive) and follow the prompts.

If all else fails, you can always stick your drive in another machine to recover the data, or reinstall Windows cleanly to another directory. Both these solutions, however, include the long and arduous job of sorting out your files.

Of course, no matter what repair method you use, you should have an up to date slipstreamed Windows CD at hand – you can use nlite (www.nliteos.com) to make one. This in turn means you should keep your Windows install up to date as well, to minimise version conflicts.

Further reading

support.microsoft.com/default.aspx?scid=kb;en-us;307654

support.microsoft.com/default.aspx?scid=kb;en-us;313670&sd=tech

support.microsoft.com/default.aspx?scid=kb;EN-US;314058

www.kellys-korner-xp.com/win_xp_rec.htm

Frobot

Enhance your gaming experience
to the Extreme



RADEON

- **X1300/X1300Pro**

*The X1300series deliver new gaming possibilities
and superior visual performance for all types of
PC entertainment and productivity*



RADEON

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*Designed with state-of-the-art graphics
technology to deliver outstanding digital
entertainment and 3D gaming*

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The Uber Linux Box challenge

Leigh Dyer revisits and revises the classic Uber Linux Box tutorial.



Many moons ago, our noble Editor set forth on a quest to bring the masses out of the darkness and into the light of Linux, and he did it in the finest way possible: by showing us all how to can take a bucket of old hardware and turn it in to the most amazing box of software tricks you've ever seen. Today though, the idea of a do-it-all Linux box seems to have fallen out of favour. Hardware routers are everywhere these days, often with wireless access points, ADSL modems, and even VoIP adapters built-in. They also have an ever-growing list of networking features, with firewalls, DNS and DHCP servers, and even VPNs all configurable from their web-based interfaces. How can a Linux box hope to compete on an equal footing with this?

The plan

The idea is simple: dust off that old PC hardware you have hiding in the corner and turn it in to a low-cost, high-performance networked server worthy of label 'Uber Box' moniker. Sure, it will handle firewalling and routing just like a cheap hardware router, but beyond that lies a whole suite of features no hardware router can hope to top: file sharing, media streaming, bandwidth shaping, web serving, game serving, and more.

If you love to tinker, and if you're reading this, that's a pretty sure bet, then you're going to learn a lot about Linux and have an absolute blast in the process. If you're new to Linux, this is the perfect time to get your flippers wet – things have come a long way in the last three years, and Linux is more accessible than ever before.

In this Part 1 of the tutorial, we'll begin by installing Ubuntu, our Linux distribution of choice, and setting up some simple file sharing services for your Windows network. In the subsequent parts, you will get to play with firewalling and network security, traffic management, VPNs, personal web servers, remote administration, advanced file storage, automated backups, and even more exotic features like remote TV capture. Rest assured, that dusty PC you thought was no good for anything will soon be truly Uber, capable of more tricks than a circus magician wearing Batman's utility belt standing in a tub of jelly. And that's an interesting picture.

Hardware

'Old PC hardware' is a pretty vague term, so let's get down to specifics. As a pure server, Linux really is light on the resources, so you could easily start with something as lowly as a Pentium with 32MB RAM. On such a low-end system the install may take a while, and the desktop will be all-but-unuseable, but you'll learn to disable the GUI in the coming months anyway. Ubuntu does take a little hard drive space, so we'd recommend you start with at least a 10GB drive, though you could easily squeeze down to about 4GB if required. To get the most out of your Uber Box though, you'll want more power: a old Athlon or Duron (or a P3 or Celeron, if you're so inclined) with 256MB RAM and a 40G drive makes a good starting point.

Of course, there's nothing stopping you from building this with beastly hardware either if you're surround by gear. Some tasks will require extra hardware: routing and firewalling requires two Ethernet ports – one for LAN

traffic and one for your Internet connection – so if your system has just one you'll want to add another.

Linux will happily handle multiple PCI network cards though, or a PCI card and an on-board adapter; you can even use USB adapters if you're PCI-limited. Serious file storage requires not just a big hard drive, but multiple big hard drives in a RAID array, to improve performance, redundancy, or both. External USB drives are great for low-cost backup storage. More exotic tasks like video capture will of course require special hardware.

If you don't have an old system that makes the cut, building a new system is always an option. An all-in-one motherboard with a cheap Sempron or Celeron CPU would have enough power for any domestic server task, and with a decent case you'll have plenty of expansion options for hard drives and PCI cards. A nice low power alternative is the VIA PD-series of Mini-ITX boards, which feature dual on-board Ethernet ports.

Installing Ubuntu

The original Uber Box series used Mandrake as its Linux distribution of choice, but it has fallen by the wayside over the last few years. Everyone has their own preference, but we've found that Ubuntu is the best option for the Uber Box, and for most new Linux users in general. It's a great distribution, with a relatively simple installer and a clean interface. Its single install CD is packed full of goodies, and it's also backed by several GB of downloadable add-ons.

Like most distributions, Ubuntu is free to download and install. Visit the Ubuntu website (www.ubuntu.com/download), find a local official mirror, and grab the appropriate install CD – feel free to take the AMD64 disc for

[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

uber

<Go Back> <Continue>

▲ Uber!

[!] Configure the network

The IP address is unique to your computer and consists of four numbers separated by periods. If you don't know what to use here, consult your network administrator.

IP address:

192.168.10.1

<Go Back> <Continue>

▲ Manual network settings.

a spin if you have the hardware for it, but otherwise just get the x86 disc. Alternatively, check your ISP's free traffic mirror if it has one.

Burn a copy of the Ubuntu install CD and boot your system from it, and hit Enter at the boot prompt. Soon you'll be looking at Ubuntu's unattractive but functional text-based installer. Answer the questions about your location and language, and the installer will detect your hardware and allow you to configure your networking, either manually or using DHCP. Then, enter your new system's hostname – we've gone for 'uber', of course.

The next manual part of the installer is the drive partitioning. Ubuntu can do this automatically if you're not fussy, but we recommend a custom setup using LVM, which replaces partitions with logical volumes that span physical disks RAID-style and be resized on-the-fly. Booting from LVM is unsupported though, so we'll have to create a small partition alongside our LVM setup to hold the kernel and other boot files. Follow these steps to partition and format your drive:

- 1 Select the 'Manually edit partition table' option to enter the partitioner. You'll see a list of the drives on your system, with the partitions and free space on each listed underneath them. Let's wipe the slate clean: select your hard drive using the cursor keys, hit Enter, and select 'Yes' to create a clean new partition table.

```

[!!!] Partition disks

This installer can guide you through partitioning a disk for use by
Ubuntu, or if you prefer, you can do it manually. If you do choose to
use the guided partitioning tool, you will still have a chance later
to see the results, customise it, and even undo the partitioning if
you do not like it.

Partitioning method:

Erase entire disk: IDE1 master (hda) - 120.0 GB WDC WD1200-JB-00C
Erase entire disk and use LVM: IDE1 master (hda) - 120.0 GB WDC H
Manually edit partition table

<Go Back>

```

▲ Starting the partitioner.

```

[!!!] Partition disks

This is an overview of your currently configured partitions and mount
points. Select a partition to modify its settings (file system, mount
point, etc.), a free space to create partitions, or a device to
initialise its partition table.

Configure software RAID
Configure the Logical Volume Manager
Guided partitioning
Help on partitioning

IDE1 master (hda) - 120.0 GB WDC WD1200-JB-00CRA1
pri/log 120.0 GB FREE SPACE

Undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>

```

▲ Time to slice and dice.

- 2 Move down to the 'FREE SPACE' entry, hit Enter, and select 'Create a new partition', then follow the prompts. This first partition will be our

```

[!!!] Partition disks

You are editing partition #1 of IDE1 master (hda). No existing file
system was detected in this partition.

Partition settings:

Use as: Ext3 Journaling file system
Mount point: /boot
Mount options: defaults
Label: /boot
Reserved blocks: 5%
Typical usage: standard
Bootable flag: on
Size: 98.7 MB

Done setting up the partition
Copy data from another partition
Delete the partition

<Go Back>

```

▲ Creating the boot partition.

boot partition, so it only needs to be about 100MB, and it should be a primary partition at the start of the disk. When the partition settings display appears, set the bootable flag on, and change the mount point to '/boot'. Select 'Done setting up the partition' to return to the main menu.

- 3 Follow the same steps to create another partition, but this time make it fill the remaining free space – hitting hit Enter when prompted for a size will do this automatically. In the partition settings, open the 'Use as' menu and select 'physical volume for LVM' before returning to the main menu.

```

[!!!] Partition disks

You are editing partition #2 of IDE1 master (hda). No existing file
system was detected in this partition.

Partition settings:

Use as: physical volume for LVM
Bootable flag: off
Size: 119.9 GB

Done setting up the partition
Copy data from another partition
Delete the partition

<Go Back>

```

▲ The LVM setup sits inside a physical partition.

- 4 Select 'Configure the Logical Volume Manager', and select 'Yes' when prompted. There are two stages to LVM setup: building the physical LVM partitions in to a volume group, and then creating logical volumes inside that group. Select 'Modify volume groups', and then 'Create volume groups'. Use the space bar to select the LVM partition and hit Enter, then type in 'ubuntu' as the volume group name and hit Enter again.

```

[!!!] Partition disks

Please select the devices for the new volume group.

You can select one or more devices.

Devices for the new volume group:

/dev/ide/host0/bus0/target0/lun0/part2 ( )

<Go Back> <Continue>

```

▲ Creating a volume group.

- 5 To create your logical volumes, select 'Modify logical volumes', and then 'Create logical volumes'. Enter the name for the volume, select your 'ubuntu' volume group to place it in, and then enter the size. Create a 3GB logical volume called *root* for the OS itself, and another 3GB volume called *home* for user home directories.

```

[!!!] Partition disks

Please enter the name you would like to use for the new logical
volume.

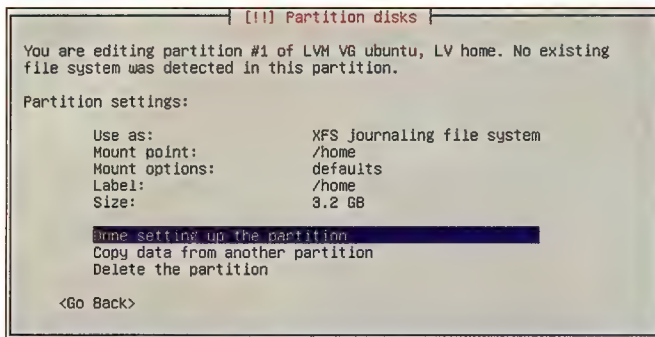
Logical volume name:
root

<Go Back> <Continue>

```

▲ Creating logical volumes.

- 6 Create a third logical volume called *swap* for virtual memory. The swap volume should generally be about twice the size of your RAM if you have 1GB or less, and about the same size as your RAM above that. Don't worry that we're not using all of your hard drive space – we can tweak things later when you need more storage.
- 7 Use the 'Leave' options to get back to the main partitioner menu, where you should see your new logical volumes listed, ready to format. Select the root volume, and in the partition settings menu

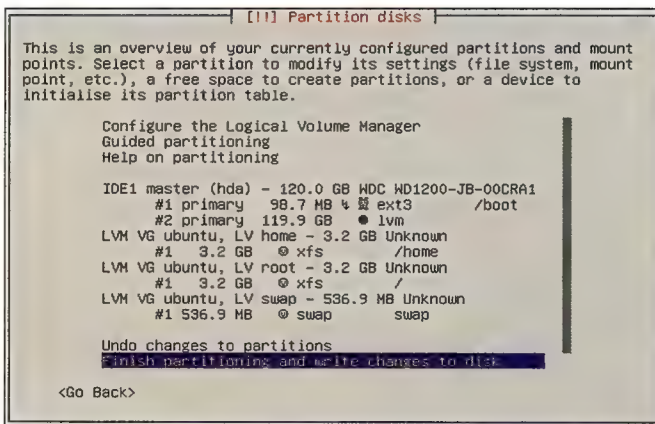


▲ Partition settings for the home volume.

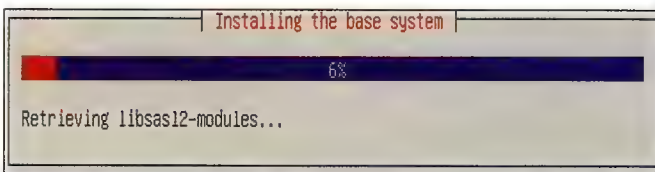
change the 'Use as' value to 'XFS journaling file system', and the mount point to '/'. Do the same for the home volume, but set its mount point to '/home'. For the swap volume, set the 'Use as' value to – surprisingly enough – 'swap area'.

- 8** Select the 'Finish partitioning and write changes to disk' to write out the partition tables and format all volumes.

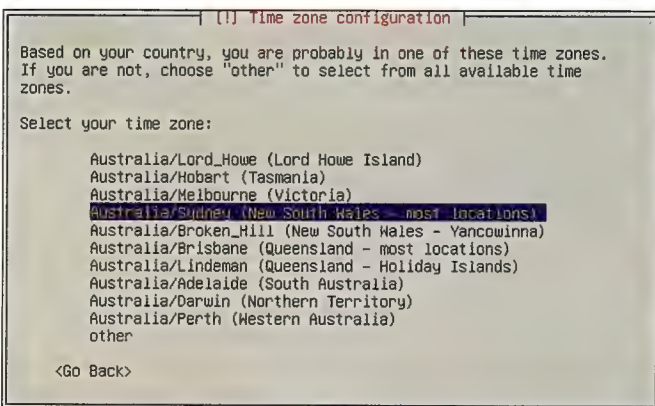
After the partitions are formatted and the base packages are installed, select your timezone and enter the details for your user account. Ubuntu disables the 'root' super-user account by default, so you won't be asked



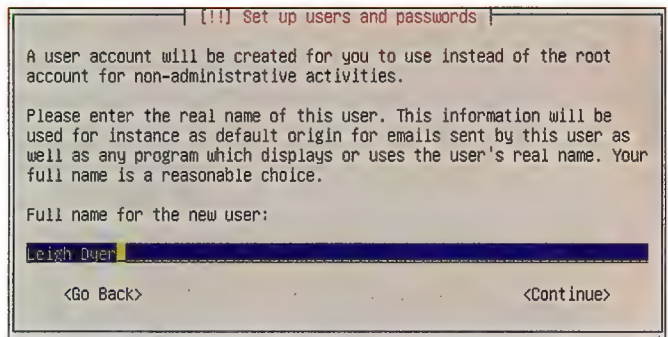
▲ Ready to roll!



▲ Installing the base packages.

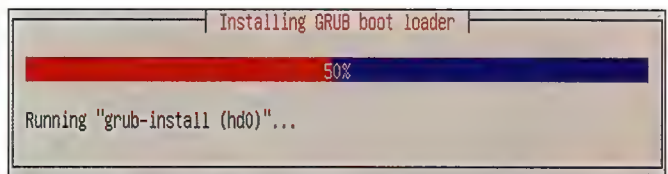


▲ Select your timezone.

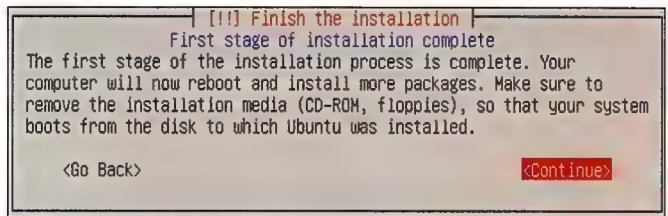


▲ Create a user account for yourself.

for a root password. Instead, the user created in the installation is given administration access. The installer then configures the GRUB boot loader and reboots the system to complete the installation. Once done, and the login screen has appeared, use the account you created during installation to log in to your new Ubuntu desktop.



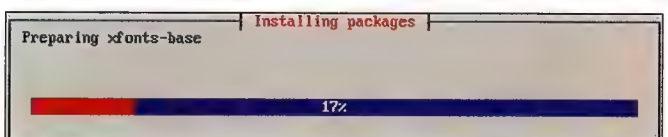
▲ Installing the boot loader.



▲ Ready to reboot in to your new Ubuntu system.



▲ Ubuntu uses a graphical boot screen.



▲ Most of the software installs after the first boot.



▲ The big friendly Ubuntu login screen.



▲ Ubuntu's GNOME desktop.

Software updates

For any PC today, though especially a heavily networked system like the Uber Box, arguably the most important thing to know is how to install security updates. Linux may be more secure than Windows by design, but

A quick desktop tour

Ubuntu uses the GNOME desktop, and it's quite straightforward, even if you haven't used Linux before. The panels at the top and bottom perform similar functions to the taskbar in Windows. The bottom lists any open windows, letting you switch between them, along with a 'Show Desktop' button and a Trash icon that you can drag files onto. The top panel contains the clock (clicking on this reveals a calendar), notification area (similar to the Window system tray), application launchers, and the desktop menus: 'Applications' is fairly self-evident, one would hope, while 'Places' lets you navigate your drives and 'System' contains user and system settings and the option to log out.

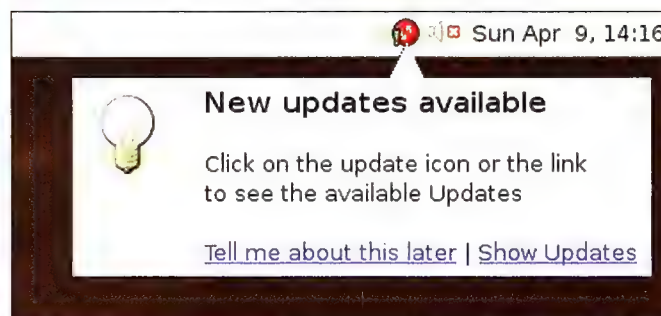
These panels are highly configurable. Right-click on some empty space on the top panel and select 'Add to panel' to add small utilities called applets – there are quite a few to choose from. You can also add a launcher for anything in the desktop menus by right-clicking on a menu item and selecting 'Add this launcher to panel'.

Even though we'll eventually be controlling the Uber Box remotely through command-line tools, it's still a good idea to know your way around the desktop, so feel free to spend some time getting comfortable with it – you may even find that it's something you want on your main PC.

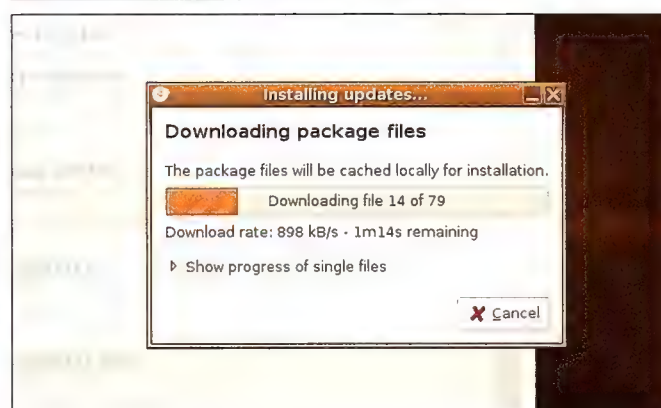
that doesn't prevent security issues, so keeping your Uber Box up-to-date is just as important as patching up your desktop PC.

Ubuntu really does make this easy, though, using the Update Manager, which can update not just the base OS, but any other applications that you've installed. If you're new to Linux and its package management concepts, make sure to read through the introduction to package management.

If networking was configured during the installer, Ubuntu should already be configured to check its standard software repositories for updates once a day, placing an icon in the notification area of your top panel if any are found. To install them, simply click on the icon, enter your password when prompted, and click on the 'Install



▲ Clear notification that updates are available.



▲ Installing a hefty wad of updates.

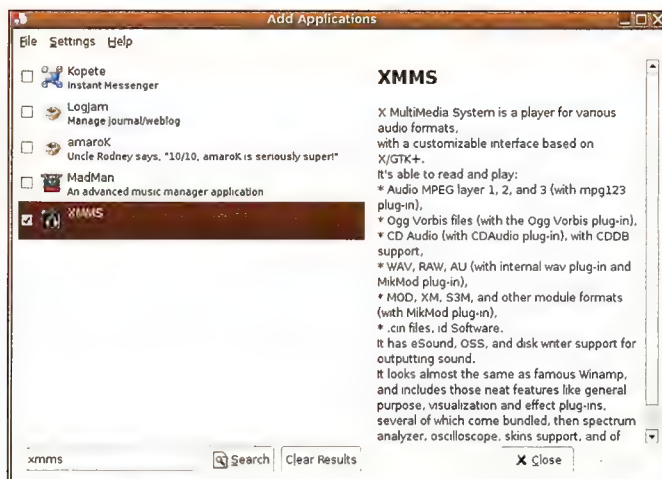
Updates' button when the update manager appears. The update manager also handles the list of software repositories to download packages from. Launch it manually from the System/Administration menu if required, then click the Preferences button to open the repository editor, where you should see the base Ubuntu repository, along with others for updates and security patches.



▲ Edit your software repositories here.

Use the Add button to add extra software repositories, like Ubuntu's large community-maintained 'universe' repository. You can also edit existing entries to change the Ubuntu mirror used, which is handy if your ISP provides a free-traffic mirror containing Ubuntu packages.

Ubuntu can also install new software the same way. Select the 'Add/Remove...' option from the desktop's Application menu to open the application installer, which you can browse or search through for interesting applications. To install or remove one or more applications, use the checkboxes beside them and click the Apply button. More powerful package



▲ Installing new apps is super easy.

selection and management is available through the Synaptic Package Manager, which you'll find in the System/Administration menu.

Quick and easy file sharing

A nice Ubuntu system is great in and of itself, but Linux desktops aren't exactly hard to come by – if that's all we wanted you to have, we'd have put an Ubuntu live CD on the cover and called it a day. We're here to put your

Linux package management

Because Linux systems come with so many interdependent software components, the individual components are built into packages. Each package lists the files it contains and the other packages it depends on, so the system can automatically prevent you removing packages that other packages are relying on. As it stands every single application and library on your Ubuntu system – every single file, in fact – is under package management.

Having everything in packages makes your system much easier to maintain, but in the olden days it also brought its own problems, since installing a new package often meant that you needed to hunt down the packages that it depended on. With Ubuntu, a huge selection of standard packages is offered for easy download using APT, an automated package installation tool. More impressively, if something you're installing has dependent packages, APT will download and install those automatically as well.

There'll always be some third-party software not available directly in Ubuntu, but sometimes even this is made available through external APT repositories, which you can access in the same way.

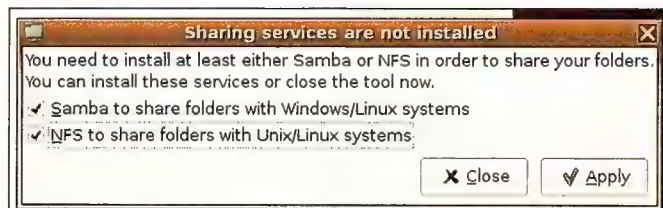
As you can imagine, APT is also very handy for patches and updates, automatically downloading and installing the latest available packages for your system with just a few commands. In fact, when a new version of Ubuntu is released, you can use APT tool to upgrade your entire system in-place to the new version, with no immediate downtime and just a reboot at the end to load the updated Linux kernel. Eat your heart out Microsoft.

new system to use, and we're going to start with some simple file sharing using Samba, an open-source implementation of Windows networking protocols:

- 1 Open the Places menu on your desktop and select 'Home Folder'.
- 2 When the folder appears on screen, right-click in it and select 'Create Folder' to create a new folder for your shared files.
- 3 Open the System menu, and under Administration select 'Shared Folders'. Enter your password when prompted. If this is the first time you've opened the Shared Folders settings, you'll be prompted to install Samba, since Ubuntu doesn't do so by default, but it's all handled automatically.



▲ Enter your password when running administration tools.



▲ Ubuntu automatically installs Samba for you.

- 4 When the Shared Folders settings window appears, click on the Add button. Click on the Path drop-down list, and use the 'Other...' option to select your shared folder. Enter a name for your share, enable the 'Allow browsing folder' option, and click OK. Using the GUI like this only gives you access



▲ The shares editor handles simple setups well.

to the basic options, creating simple shares without secure logins, but it's just the ticket for throwing a few files around on your LAN, and the start of making your Uber box a fully featured file server on your network. From here, the shared folder should show up on your Windows PCs on the network, allowing you to read and write files to the Uber box.

Next steps

If you've made it this far, you should have a nice, solid Linux system with networked file sharing: a worthy accomplishment, but perhaps not quite Uber just yet.

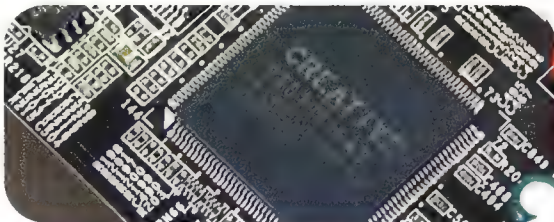
Next month we'll be taking a detailed look at firewalling and network security, starting to learn the Linux command line, and using SSH for secure remote management. It only gets better from here.

So settle down with your new box and we'll see in Part 2 next month!

Diamond Heart, Irresistible Charm

MSI K8N Diamond Plus, the world's 1st Hi-Fi motherboard, is MSI's first AMD motherboard using the NVIDIA NForce 4 SLI X16 chipset. With 26 awards and still increasing all over the world, this brilliant motherboard has impressed most editors not only by its layout but by its outstanding performance.

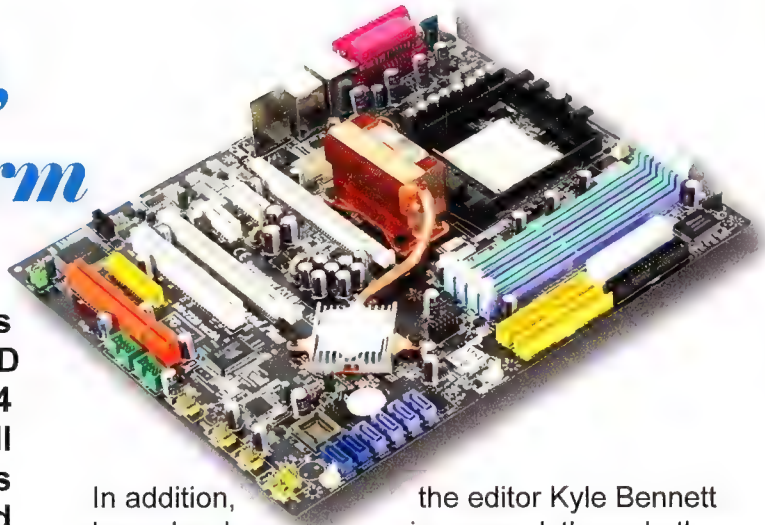
The following is a quotation of "HardOCP Enthusiast" recent review conclusion.



World's First Audigy SE surround on MSI Motherboard

The author of this review--Daniel Dobrowolski's thoughts:

"My impressions of this board are generally favorable. The layout is nearly flawless, and MSI did an excellent job with the integrated devices. The software suite was solid as well. I especially liked the Live Update features for drivers and the motherboard BIOS. In general this is a great board... The BIOS layout and configuration is awesome and was a joy to work with. I also have to applaud MSI for using a Creative Labs Audigy SE as their integrated sound solution. This is a great solution and offers superior performance and sound quality when compared to 99% of onboard sound solutions. This also saves the end user the need to sacrifice a PCI slot. Especially since you really only have two and even then, depending on your PCIe devices, you may not get to use them easily either... The K8N Diamond Plus was also a feature rich solution that should please just about anyone. In short, this board should be on your short list of boards to consider if you are in the market for an NVIDIA SLI compatible motherboard."

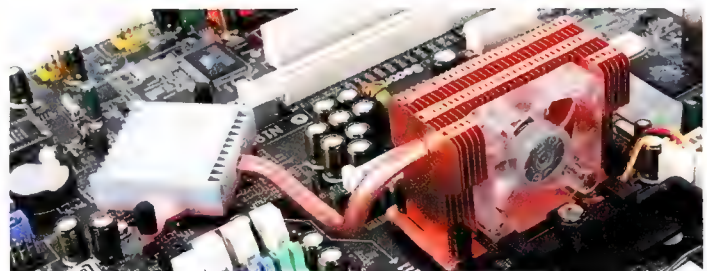


In addition, the editor Kyle Bennett has also been impressed through the testings:

"The MSI K8N Diamond Plus endured days of stress testing with full loads placed on the dual core CPU and SLI configured GPUs. Our K8N Diamond Plus was one of the most stable and reliable motherboards we have seen recently. Overall I very much liked the K8N Diamond Plus and would consider using it my personal system and have not problem suggesting that our readers keep it in mind when purchasing a enthusiast motherboard."

The Bottom Line

The MSI K8N Diamond Plus is a very capable and robust motherboard that has the integrated Creative Soundblaster Audigy SE sound controller which some users are going to find very appealing. The K8N Diamond Plus is solid and stable and should fit the bill of most computer hardware enthusiasts that are looking to push their hardware close to its limits while enjoying the benefits of NVIDIA's SLI multi-GPU technology." (April 11, 2006)



Heatpipe: Use heatpipe to re-direct the heat from Southbridge chip to Northbridge. This heat pipeline cooling system on K8N Dimond Plus is the best heatsink solution you've ever wanted!



MSI
MSI COMPUTER AUSTRALIA



The ninja drive

Ron Prouse shows you how to make the ultimate stealth optical drive.

Supplies

PC Case Gear (www.pccasegear.com)

- CoolerMaster alloy front bezel, \$16.50 ea, or
- Lian Li universal bay cover, \$14.50 ea

Disclaimer

Whenever you pick up power tools, cutting and grinding instruments, or even a can of spray paint, you are putting your general wellbeing at risk from some form of industrial level accident. We take every precaution by wearing appropriate safety equipment, using tools with respect and within their limits, and by not inhaling the contents of glue and paint containers. We suggest that you should follow a similar regime, and seek professional assistance and guidance if you are attempting a task outside of your skill set. *Atomic* and staff are not responsible for your safety.

Tools

The tools used in this part of the tutorial are mainly those found in the average garden variety shed, including a Dremel, jigsaw, sandpaper, metal nibbler, some acrylic sheet off-cuts, masking tape, plastic glue, two-pack epoxy adhesive and aerosol paint. The main requirement is a decent bench or table, providing a solid, flat surface to operate on.

According to the ancient dictionary that we use to keep the printer from vibrating its way off of the desk, the noun 'stealth' means the practice of moving, proceeding, or acting in a covert way, displaying the qualities or characteristics of being furtive or covert (see also: sneaky, crafty, sly, Bill).

Even at a stretch, none of those attributes seem to have any relevance when describing a computer case or peripheral.

However, for those of us who are techno-geeks, the first public appearance of the Lockheed F-117A Nighthawk stealth fighter in 1982 changed the meaning of the word 'stealth' forever. Stealth suddenly became another term for secrecy and concealment, the ability of something to 'be' without others knowing what it was – which is a definition that can easily be related back to the craft of case-modding.

We are not quite sure what it was that drove early case-modders to practise the camouflage of optical drives, but the origins of this enigmatic practice date back to the early 1990s.

One thing is for sure, stealthing optical disc drive (ODD) drives can still be used to create a clean, minimalist look for any front bezel. This tutorial will look at a few different options, concepts that might be a solid starting point for your own individual project.

1 Full stealth

For the sake of this exercise, our first example is going to be a traditional 'full-stealth' cover for a CD-ROM. The 5.25" cover in the picture below is a fairly standard style of plastic cover-plate, with four securing clips and a couple of ribs cast into the length of the body to give it rigidity. The starting point is to remove all of these, and to sand down the inner surface as flat as possible. Removing the ribs can be made easier by using a very sharp wood chisel to gradually 'shave' them away, but remember to keep all of your body parts *behind* the cutting edge, just in case it slips.

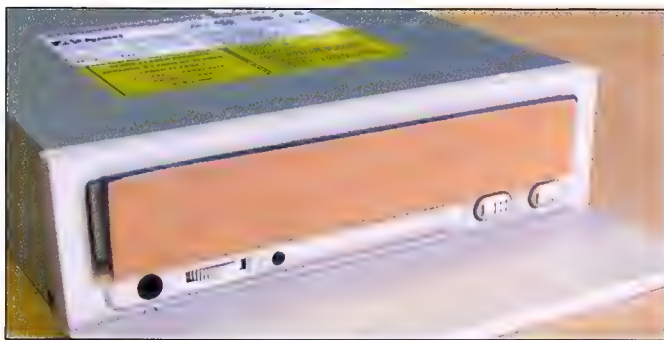
As well as creating a flat surface for gluing, removing the ribs will also help to make the plate a little more flexible, which is an important attribute for later.

Once the inside of the cover-plate is prepared, move your focus to the outside edges. To make sure that the cover will glide in and out of the front bezel without catching on any protrusions, fine sandpaper is used to taper off all of the inside edges of the perimeter, while maintaining the integrity of the outside dimensions.



2 Rather than use an ODD with a flat, square facia, we went in search of a drive that will help illustrate how to overcome the common problem of frontal 'bumps and grooves', aptly demonstrated by this AOpen dinosaur. The first requirement is to create a flat, raised section on the tray door, using a small acrylic off-cut as a spacer that will protrude out further than the bumps do – in this case, 2.5mm was ample. The objective of the spacer is to have as much area as possible toward the top of the drive, but to avoid the areas around the tray eject button and any of the aforementioned 'bumps and grooves'. The spacer should not make contact anywhere on the drive facia apart from the tray door. Before joining any of the components, it is important to 'rough up' the contact areas of both surfaces with sandpaper, as this will ensure that the resultant bond has maximum strength.

Once fabricated, the spacer can be glued on to the tray door with a strong, hard setting plastic glue, such as IPS Weldon #16 that we opted to use here.



3 Gluing the cover-plate onto the tray door/spacer assembly into the exact position is easier than it first seems – fit the drive into the case so that the cover-plate fits into the precise spot where you want it, add glue to the contact surface of the two components, and then hold them firmly in place for the few minutes until the glue starts to bond.

Once the bond has cured, the next step is to detach the tray door from the disc tray – the same removal technique can be used on every modern ODD that we have had experience with. With the tray in the open position, flex the centre of the tray door away from the drive body and then slide it upward on its outer runners. One small click, and it should slide off with minimal effort, while reassembly should be just as simple.

Now, the next step is superfluous if you are happy using the 'right click – eject' command in Windows or similar, however, software control is not always as convenient as a hardware button.

Over the years there have been many weird and wonderful solutions to opening the drive tray, from lumps of BluTac to small metal springs glued in situ, but the simplest answer we have found to date is a section of self-adhesive, square cable tie mount (Jaycar # HP1195), as shown in the inset. Cut in half, the mount is positioned directly above the eject-button, and then filed down to the correct height – so that there is about 1.0mm of clearance when the tray is fully retracted (lower inset). That should sort you out for an eject button.

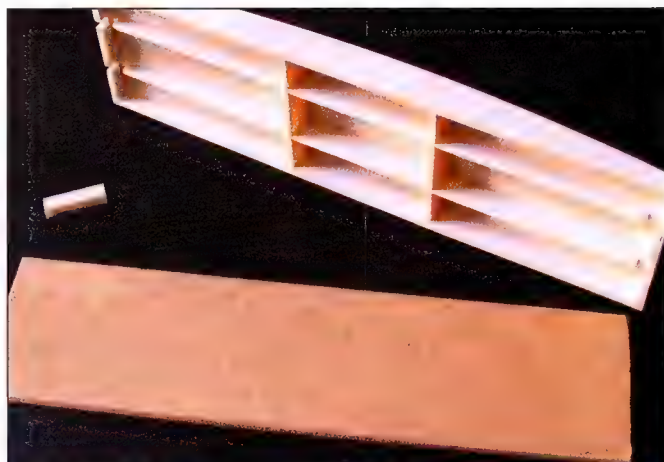


4 The final product is one of the coolest looking 'retro' mods around, and perfectly reflects the fundamental 'stealth' concept of secrecy and concealment, with no external indication as to what lies beneath the surface. The only real drawback is that the LED activity indicator is not visible when the drive door is closed. Access to the drive is a simple matter of lightly pushing on the lower right-hand side of the cover-plate, which will flex inward enough for the cable tie mount to activate the eject button (see insert).



1 Semi-stealth

One of the reasons to stealth a drive might be to retain the look of a case bezel rather than hide the drive completely. With a semi-stealth scheme, this can be achieved while still retaining the functionality of an exposed button and 'drive activity' LED indicator... so that the drive is semi-obvious, without detracting from the case as a whole. In this example, the curve of the case bezel looked weird with a flat-faced drive jammed into the middle of it, and the overall effect of the 'water tank' corrugations on the front was something that we wanted to preserve. An impacting issue was the inner construction of the cover-plate, which had extensive bracing to give it rigidity, and cutting all of it away to get to a flat surface was not really a viable option. The answer was to create an inner 'skin' for the contact point. As in the first example, the initial step was to cut off the retention tabs, and taper off the inner edges so that the cover-plate would slide in and out of the bezel easily. A section of acrylic was cut to size, and fabricated so that it was a tight fit on the inside of the cover-plate.



2 The ODD used here had a perfectly flat facia, with the only protrusion being the eject button, which sat 2mm out from the body. To get the inner plate to fit 'flush' up against the drive facia, a small square, slightly larger than the button itself, was drilled and filed out of the sheet. By using 2.5mm thick acrylic sheet, the end result was that the eject button was actually recessed 0.5mm inside the confines of the inner plate. At this point the location of the LED indicator was marked, and a 3mm hole drilled through the acrylic sheet, as a crude form of optic fibre will be fitted through this section later.



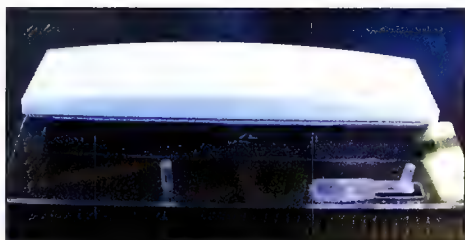
3 Before gluing the plate to the drive door, both surfaces were lightly sanded to ensure maximum bond strength would be achieved. Masking tape was used to mark out the contact area of the two surfaces, and protect them from scratches and excess glue. As with Step 3 in the full stealth mod, when gluing the components together the easiest way of lining up the acrylic plate with the drive fascia was to sit the drive in the case, and then align the acrylic plate with the surrounding bezel. IPS Weldon #16 plastic glue, which sets in under five minutes, was used to form a hard-setting, solid bond between the two surfaces.



4 Once the acrylic section was glued in place, the door assembly was removed from the drive tray for further modification. The next step was to fabricate the 'remote' eject button, using a flexible 1mm thick strip of acrylic as the return spring and retainer. Firstly, a 3mm hole was drilled through one end of the strip, which was then shaped so that the thinner section could pass through the cut-out hole in the acrylic plate, and push against the drive button. The section that will attach the spring segment to the main plate was left wider so that it would have a larger contact area – for a stronger and more durable joint.



5 The final step in fabricating the switching mechanism was to glue the flexible strip in place, positioned so that the wider edge of the strip is level with the inner edge of the cut-out in the acrylic plate. Two small lengths of 3mm clear acrylic welding rod were cut and glued into the plate, one for the 'fibre optical extension' of the drive activity LED, the other as the actuating button for the remote eject button. The positions were then marked for the two holes in the cover-plate, with the one for the LED indicator drilled to 3mm for a press-fit, while the eject button hole was drilled to 3.2mm allow the rod to 'slide through'.

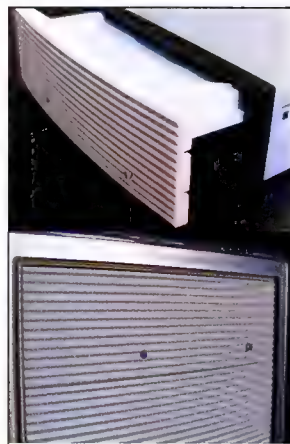


6 With the inner plate finished and the holes drilled in the outer plate, the final fit-up can begin. The drive door assembly was fitted back onto the disc tray, and the action of the remote eject button checked for functionality. With everything working properly, the inner and outer cover-plates were glued together, again using the method mentioned above to keep everything lined up precisely. With the covers assembled, 1200 grit Wet'n'Dry sandpaper was used to bevel off the outside of the jointed edge to 45°, so that the tray would be able to slide open and closed without catching on the edges of the front bezel or surrounding bay covers.



7 The final outcome. The remote eject button required an inward travel of 0.5mm to operate the eject process, so 1mm of it was left protruding to keep the end external to the cover-plate at full indent. Shortening the sections of welding rod was done by masking-up the front of the cover-plate around them with several layers of tape, and then using fine sandpaper lubricated with Brasso metal polish to sand them down to the required length – this method will leave the end of the rod with a smooth, glass-finish, and allow the blue activity LED to shine through clearly.

When assembled back into the case, the semi-stealthed drive keeps the integrity of the original bezel, while it is still obvious that the bay is occupied by an ODD. If the new drive fascia does not slide smoothly into place when being closed, any 'high spots' on the outer edges of the drive-cover can be removed by sanding them down until it completely clears the bezel.



1 Aluminium sheathing

Although sheathing a drive inside of an aluminium cover-plate is not a traditional form of stealthing, it does deliver a finish that helps to make an ODD conform to the look of the rest of the bezel. It is a practice that began in the late 1990s, when beige was the only colour that optical drives came in – a look that was totally out of place in emerging brushed aluminium enclosures. The easy option was to paint the drive fascia with silver spray-paint, but if you were a dedicated modder looking for perfection then that didn't really cut it.

In 1999, the cost of a Hewlett Packard 4x CDRW was over AUD\$700, so this was a mod that really took some guts to attempt, considering that the procedure requires you to effectively destroy the drive fascia! The



donor drive here is a slot-load DVD-ROM, but the method is the same for any ODD. First step is to cover the aluminium plate with masking tape to protect the finish, and remove the retention lugs, then detach the plastic fascia from the drive. On a Lian Li case, the 'lip' across the top and bottom of the cover-plate is approximately 5mm deep, and the side lugs need to be trimmed down to the same measurement.

2 The next step is the pivotal point to getting it right. Equal amounts of the drive fascia have to be ground off of each side, removing enough of the plastic so that the fascia will fit snugly and squarely into the inside of the cover-plate. The trick here is to remove small even amounts at a time from each side, and taper the fascia slightly in towards the front contact area. As you will notice in the picture, there is hardly any of the outer lip of the drive fascia left intact. Once the fascia is a snug fit, remove all of the buttons, LED lenses, and dust guards and, using a sharp metal scribe, transfer the dimensions of the fascia holes onto the inside of the cover plate. The easiest method to get the holes to the perfect shape and size is to drill 4mm pilot holes, and then use jeweller's files to remove the rest of the excess metal. The hardest cut, the large opening for the drive entry, is best done with a metal cutting tool called a nibbler, which removes small squares of the sheet metal cleanly and accurately.



3 Once the main areas of aluminium have been removed, fine grade Wet'n'Dry sandpaper can be used to smooth off any rough edges and to fine-tune the shapes of the holes. To ensure that the drive opening is kept straight and square, wrap the sandpaper around a wide steel ruler, or similar, which will avoid 'sanding in' unsightly waves or ripples. The final touch is to use a metal polish, such as Autosol, to give the exposed aluminium edges a mirror-shine. There will be small areas of the original fascia that are left visible, but their optical impact can be minimised by painting over those sections with flat silver modelling paint. Once the



painted fascia is dry, all of the hardware can be fitted back into the fascia, and the finished cover-plate glued on to the drive with quick-set two-pack epoxy glue. Once the glue has set, the aluminium sheath is an integral part of the drive for life!

4 How far you go is up to you. In this example, the top drive is kept very simple, with just the eject button and the activity LED visible, whereas the lower drive has been given full functionality including the earphone jack and volume control. When this method is used on a tray-load drive, the drive door will have to be covered with matching aluminium from another source – such as a window cut-out – or an alternative can be used. To keep the same appearance as the rest of this Lian Li case, the lower drive has had a section of carbon fibre trim glued onto the drive door, using a similar method as for the stealth mods above. The great thing about sheathing drives in the original drive-covers is that they will match the rest of the bezel perfectly, giving a consistent OEM look to the case.



Conclusion

The last alternative for covering up unsightly ODDs are the commercially available aluminium drive-covers from the higher-end case manufacturers. Both Lian Li and Cooler Master have products available that either glue to the drive fascia or attach to the case body with screws, and these offerings could easily be adapted to other brands of enclosures. They can look especially effective as a contrast feature in painted cases, or as a surprise highlight behind a case door.

Hopefully, in this stack of examples there is a concept that will be suitable when it comes to your next modding adventure but, if nothing else, it is a graphic example of how a simple mod can evolve over time, in this case over a decade.



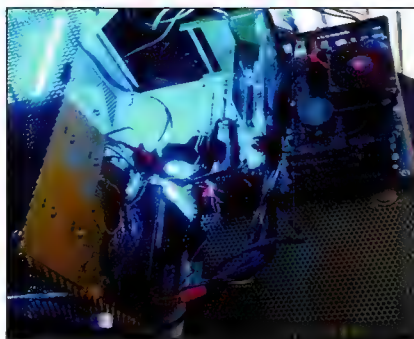
hotbox

The best reader-submitted custom made boxes every month!

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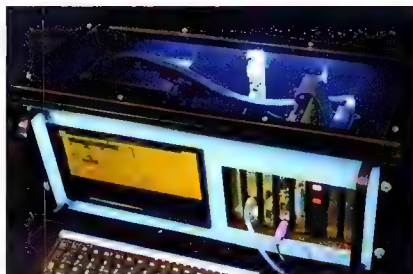
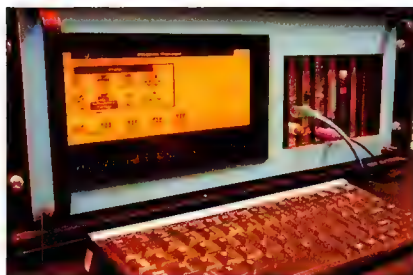
ArJuna's Turbulence ▼



technical details

- AMD Athlon XP 2400+ @ 2.2GHz
- Epox 8RGA+ motherboard
- Corsair XMS3200C2 Rev 4.3
- Leadtek 5900XT (520/1020)
- Antec NeoPower 480W
- Liteon 52325W and 812S@832S

Phil's AMD Rack Rocket ▼



technical details

- AMD 386SX 25MHz
- 3709KB RAM
- Seagate 213MB HDD
- Advantek PCA-6133 motherboard
- Yamaha Display Master CGA
- Sharp 512x250 pixel orange plasma

Ewan's Beast ▼



technical details

- AMD Athlon XP 2400+
- ASUS A7N8X-X
- 1GB Hyundai Hynix DDR 400MHz
- NVIDIA GeForce 6600GT 128MB
- 40GB 7200rpm Seagate HDD
- 8GB Seagate HDD (backup)

atomic hotbox OF THE MONTH

hotbox

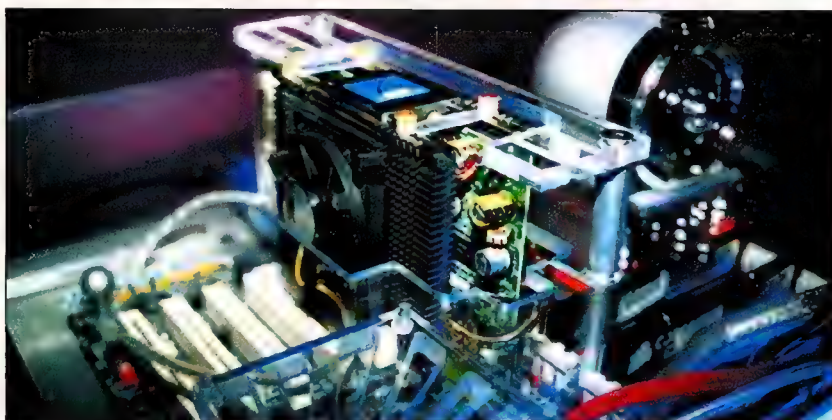
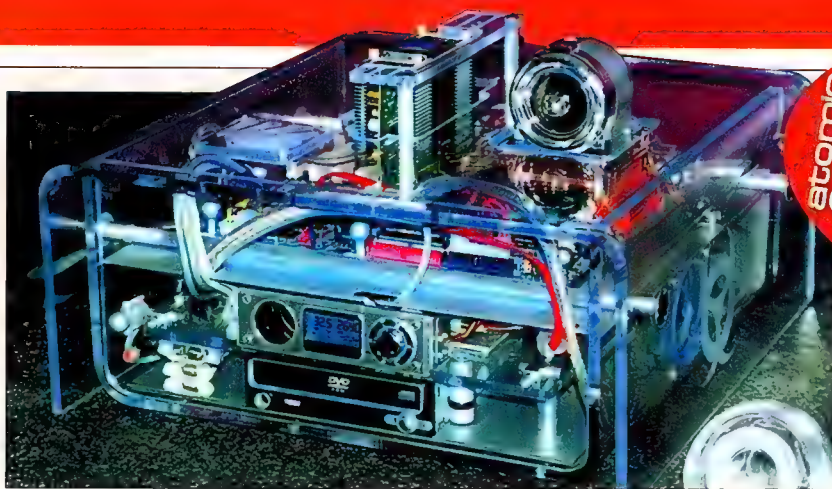
Russell's Hotrod

I wanted to create a case that was transparent, with lights while maintaining isolated thermal zones. The motherboard sits on a removable aluminium panel providing a barrier to the heat generated by the PSU, hard drive, and DVD burner. This is cooled by 1x 40mm and 3x 80mm fans. Topside sucks through an 80mm case fan and the Jet4, to vent through the rear of the case. The two halves of the case are held together with 2x aluminium rods keyed into 25mm stainless FIX heads. Most of the cables have been custom made or sleeved. The whole project took about four months to basic completion. I tried to allow for future upgrades and plan aesthetics before cutting as any alterations would be highly visible. Most machining was done by hand with a router and drill press.

Andrew

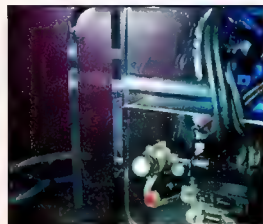
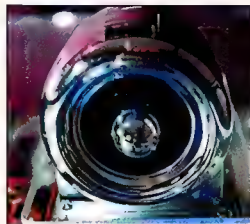
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- A detailed list of the machine's specs.



technical details

- Pentium 4 2.8GHz
800MHz FSB
- Gigabyte GA-8IK1100
- 3GB PC3200
- 480W Antec PSU
- 128MB ATI RADEON 9800 PRO
- Coolermaster Jet4



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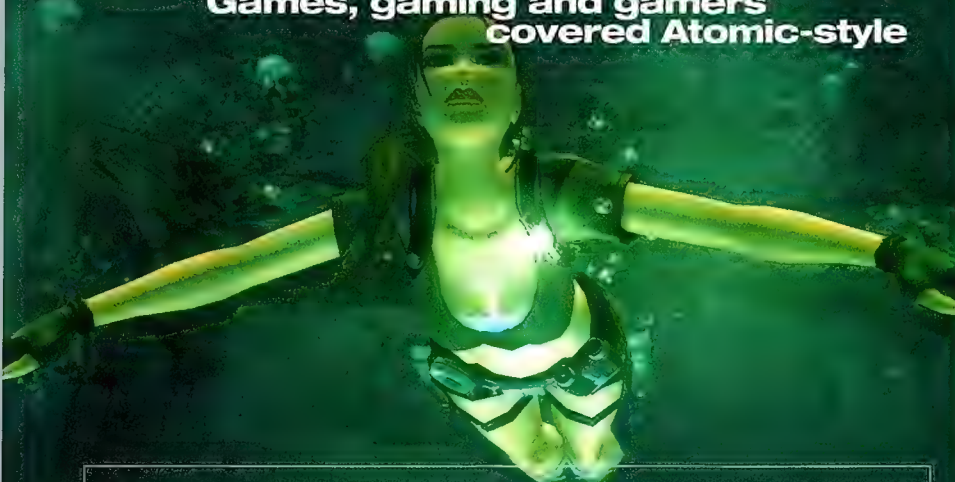
PC DVD

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gameplay

Games, gaming and gamers covered Atomic-style



It's no big secret that PC gamers regard themselves as culturally superior to console gamers. It's one of Techdom's Great Ridiculous Religious Arguments. Like PC vs Mac. ATI vs NVIDIA, Intel vs AMD and Windows vs Linux.

It's been worked to death and is actually really boring. The PC vs console 'debate' is ultimately pointless. It assumes there is one breed of 'gamer' and that some 'gamers' have ignorantly chosen the 'wrong' platform.

In reality there is no such thing as the 'gamer', although you can't tell that to most sales, marketing, advertising and PR groups. In reality, as the rest of us know, there are loads of different people that play loads of different kinds of games.

Where there is a difference is in the styles of game, and more importantly, the way they are played. Despite the 3D power of consoles, the PC is where most 3D games end up. These games are developed on high-end PC hardware that you most likely have at home, or something close to it.

You'll tweak the game settings so it *Runs Great on Yours*, whether a simple muck around in the options screen for res and detail or tooling around with .cfg or .ini files.

It's this tweaking that gives PC gamers their feelings of cultural superiority. It's purely because most PC gamers feel they not only own better hardware, but that

they are in complete control of it. This, incidentally, is also why Linux zealots also feel superior to Windows users. It's the whole 'we make it work the way we want' vs 'as long as it works' argument. It's always been this way.

But nothing lasts forever. PC gaming is about to change in ways some see as subtle improvements, but will have a wider religious impact. In a recent lunch meeting with Shane Kim, general manager of Microsoft Game Studios, Shane spoke of Vista gaming and Microsoft's goals with PC games development.

Shane told me that the push is to have PC games operate as transparently as consoles. Just plonk the game CD in the drive and up comes the game. I asked about tweaking, and was told Microsoft's goal was to have it kept to a minimum.

While understandable from a marketing perspective, I expect and support a resistance from PC gamers.

Microsoft can do its own games its way, but we'll soon be seeing where other developers stand in the religious wars of PC and console gaming.



Ben plays game!

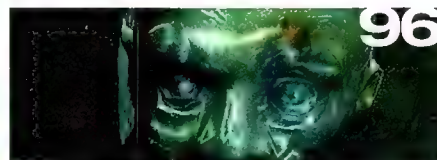
ben@atomicmpc.com.au

this month



Scanner

We check out the PS3, while Kate Inabinet talks about surprises in the bathroom.



Talking Head

Logan Booker ponders the age-old question: To mod, or not to mod?



Pipeline

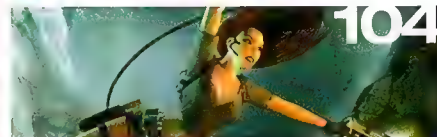
Find out why table tennis is the next big thing since Grand Theft Auto.



Engine Room

Logan Booker gets all mythical with Brian Sullivan and Iron Lore's Titan Quest.

gamereviews



Tomb Raider: Legends



Red Orchestra



Trapt



24: The Game



Ghost Recon

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short circuits



Be a desperate housewife, you know you want to.

Buena Vista has just announced a game based on the television series, *Desperate Housewives*. Supposedly aimed at The Sims audience, it will let you 'live all the gossip, drama and intrigue of a true desperate housewife.' After reading *Atomic* #62's Fallout article, we wouldn't be surprised if Logan was secretly overjoyed.

Huzzah – Sid Meier's Civilization IV is getting an expansion pack. Entitled *Warlords*, it will include six scenarios, more civilisations, wonders, resources and units, including 'warlords' – powerful little guys based on some of the greatest military leaders in history. Expect to have your significant other dump you again in winter.

Firefly Studios and Firaxis Games have just announced a new sim game they've been collaborating on. Called CivCity: Rome, it will see you manage the historical city from its humble beginnings as a small settlement. Expect hundreds of different buildings, ranging from gladiatorial schools to weapons workshops.

Microsoft has unveiled a pre-release version of its much-vaunted XNA Studio at the recent GDC 2006. While we're a little nervous about XNA making the PC/Xbox 360 port process easier, we're very excited by the idea of gamers on both systems playing against each other and running our own dedicated servers for Live-enabled games.

Scanner

Game, industry and online news for the enthusiast



PlayStation 3: facts and figures

Christopher Taylor pieces together some of the details about the PS3.

With the 360 finally available in Australia, it's time to turn our attention to the PS3. So far, all we've really known about is the hardware and a few cross-platform titles like *UT2007* and *Stranglehold*. Here are some of the details – both old and new – that we've learnt so far.

First off, there's the hardware. It sounds impressive to say the least, with the much-vaunted Cell processor running at 3.2GHz. A 550MHz REX GPU handles the visuals. Sporting 256MB of dedicated memory, nVidia claim that it's as powerful as two 6800 Ultras. On top of that, there's 256MB of RAM. Storage-wise, there will be an external hard drive (no details available at the time of print) along with support for Sony Memory Sticks, USB thumb drives, CompactFlash and SD cards. Aside from the much-vaunted Blu-Ray discs, the optical drive will also play CDs, DVDs and PSX/PS2 games.

Reassuring us that the HDTV era is well and truly under way, the PS3 will run at resolutions up to 1080p. In terms of audio, games won't just use Dolby Digital 5.1, but DTS and LPCM as well.

Wireless looks set to be a big thing with the

PS3 – there will be a gigabit Ethernet port, but it will also support 802.11b/g Wi-Fi. The controllers will be wireless, connecting to the unit via Bluetooth. PSP owners will be able to wirelessly connect to their PS3 to download content which can then be viewed remotely. PS2 memory cards and controllers won't be supported, but the EyeToy will be.

Sony is also jumping on the online distribution bandwagon. You'll not only be able to purchase content online (i.e.

more songs for SingStar), but download entire games and run them from the 60GB hard drive as part of the 'E-Distribution Initiative' (www.playstation.com/beyond). The PS3 looks set to have an impressive library of both exclusive and

The PS3 looks set to have an impressive library of both exclusive and cross-platform games...



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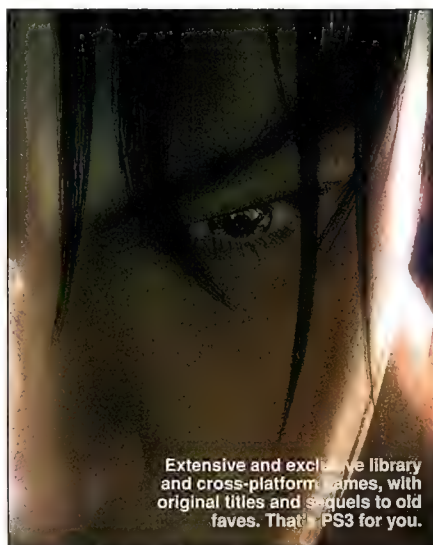


The end of HDTV is well and truly under way. PS3 will run at resolutions up to 1080p.

cross-platform games, with both original titles and sequels to old favourites in abundance. The games will be region free. Thanks to the high capacity of the Blu-Ray format, developers will now be able to include PAL, NTSC and multi-lingual content all on one 'version.'

Sony has recently confirmed that the PS3 will launch simultaneously worldwide in November – a far cry from Microsoft neglecting some regions of the world (ahem) until late March.

In terms of cost, there are all sorts of horrifying rumours floating around. Sony hasn't commented on them. In other words, it's time to remove that superfluous kidney.

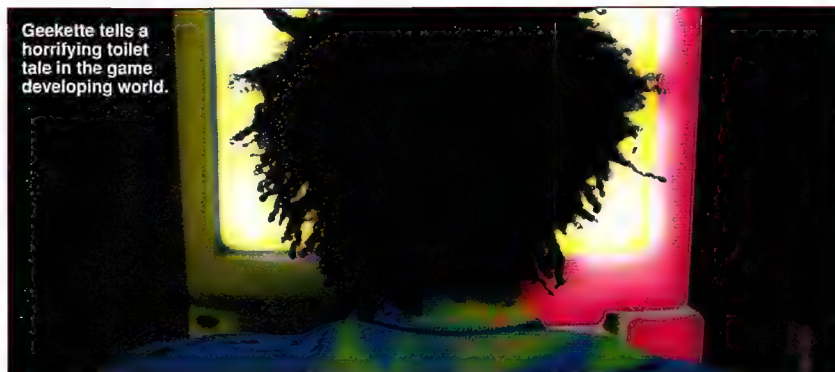


Extensive and exclusive library and cross-platform games, with original titles and sequels to old faves. That's PS3 for you.

geekette

A girl's eye view of the gaming world.

Geekette tells a horrifying toilet tale in the game developing world.



The Alpha deadline, no matter how carefully planned, is a monster that turns an otherwise vibrant office into a house of the living dead. Family, friends and weekends are stolen and replaced like changelings by 18-hour stints behind the computer, convenience food, and the quiet hell that is other people's body odour. Previously raucous staff drift ghoulishly through the corridors in the wee hours... mouths agape and eyes glazed over from the endless sleepless nights, drawn blindly to a snack machine that promises an all too fleeting sugar rush. Greasy, unwashed hair flaps limply in their wake while angry red pimples provide the only source of colour to a tired and pallid complexion.

Cries of anguish and nervous laughter filter through the cubicles as co-workers try to counteract the madness by regaling each other with ghosts of Alphas past. Feverish accounts of the suffering and woe we have willingly endured for the love of our art, our game and the people who buy it – but none more horrifying than this disturbing tale from one veteran of the milestone.

'One's diet is the first casualty on the long-march to Gold. Long hours sitting slumped in ergonomic chairs combined with loveless takeaway meals delivered at all hours – these things take a toll upon the human body. One late night, when visiting the bathroom shared by the dev team, a

lone developer chanced upon a frightening protrusion in the bowl.

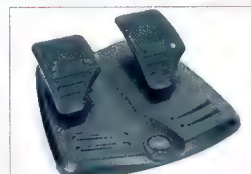
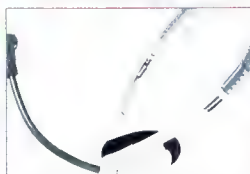
'Like Excalibur of old, it reared out of the water, a monstrous legacy of late-night development, a turd of blasphemous proportions. Colleagues were first alerted by the screams. Investigating the source only brought more witnesses to the crime scene; shock and disbelief were writ large upon people's faces.

'Flushing proved fruitless, buckets of water could not shift it, eventually a tool had to be employed to clear the blockage. "Who could have done this?" "How could they still be alive?" Just like the movie "The Thing", our tightly-knit community began to unravel as fear and suspicion spread through all those assembled. In order to stop us falling apart, from that day forward, a pact was made – good food, plenty of exercise and a commitment to global hygiene standards. Even though the culprit never came forward, that one glimpse into the abyss transformed the survivors into a band of health freaks, committed to better nutrition.'

So next time you pick a game from the shelf, take a moment to appreciate what we've been through to get it there... and be sure to wash your hands.



Kate Ashfield is currently an Animator at Blue Tongue. Prior to games development, Kate spent six years in advertising and short film. She studied at the AIE in Canberra where she is still involved as a mentor for the Women in Games Pathway, presenting regularly at conferences on the topic.



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talking head

Logan tells you everything you really need to know about gaming

Mod squad

Logan Booker is an Oblivion purist. Death to the impure!

Today it's not uncommon for a game to support custom modifications, often created using tools supplied by the developer. Many PC-based RPGs, including Morrowind, World of Warcraft, Neverwinter Nights and now Oblivion allow for some sort of tweakery or content creation, from simply adding in new areas to explore, all the way through to changing the fundamentals of an NPC, class or even an entire race.

I can't speak for everyone but I know that I've spent hours lost in front of my PC, contemplating whether to change an aspect of a game I didn't like or thought could be done better using the included tools.

This month's game is Oblivion.

Now, Oblivion is one heck of a moddable game, more so than its predecessor Morrowind. Both share the same game engine, NetImmerse/Gamebyro (albeit Oblivion's is a far more advanced version) and the toolkit that you can download for the game from Bethesda's website is close to identical to the toolkit that came with Morrowind. As a result, in less time than it takes to strip your first female character to ogle her lovelies, mods have popped up all over the place promising refined stat generation formulas, tweaked level lists and improved user interfaces.

But should you use them? This is the question that plagued me for first couple of days after I got my hands on the game. I could tell that I was levelling too fast, and the UI was a claustrophobic compromise for our Xbox 360 brethren, and I was itching to install a few mods to improve my gameplay experience.

I'm happy to say I've left Oblivion mostly unmodified. I've limited myself to just three: one that reduces the rate in which you level; another to improve the visual quality of the water and the last a revamp of the UI to take advantage of the higher resolution provided by a PC.

Of these, only one presents me with a dilemma – the slower levelling. Its inclusion is justified (to me at least) by the fact that it doesn't help me in any way. It just makes the game last longer. To me, this is the best balance between the pure Oblivion experience as provided by the game designers, and my desires as a gamer.

Well, almost.

I don't like the idea that the game 'levels' with you. Instead of feeling powerful as you grow in strength, your opponents grow in strength with you. Street thugs eventually carry expensive armour and weapons, contradicting their need to be thugs in the first place. Finally, the game employs an inefficient levelling model that heavily promotes power-gaming or 'min/maxing'.

Ideally, I'd love to have all of these fixed for my journey through Oblivion's world of Tamriel. A combination of distrust over the maturity of mods that address these problems and my want to play Oblivion 'pure' have so far stopped me from installing any of them.

My solution? Play the game to its conclusion with no mods and then, once I have the game soundly defeated, play through again as a different character with all the mods installed. If I'm lucky, it'll be like playing two separate RPGs and hopefully force me to approach the game in a different way.

That's the plan at least.

Obviously, this is the optimal solution for me. But let's say you don't plan on playing the game a second time. If you do go and install the mods for your virgin visit, then you're not playing the game you bought – you're playing the game you bought plus what other people believe will make it better. This will change your gameplay experience on a fundamental level and will impact your ability to compare your progress with other players.

If, however, you decide to be patient, not only can you experience the game as it was intended, you can download the mods you believe will make it better, as well as include your own for your next play through.

Unfortunately, you'll just have to hedge your bets that the second time round will be different enough to let you experience the alterations to their fullest.

Logan loves his games. He loves them *like children*.

logan@atomicmpc.com.au



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- Optical
- Ethernet

- Suitable for: DVD and VCR Players, Satellite Receivers, Camcorders, Playstation®, Xbox™, GameCube™ etc.

Release Date **Q3 2006**

Rainbow Six: Vegas

2006 looks set to be the year of the Tom Clancy game, with the Ghost Recon and Splinter Cell franchises both getting a sequel apiece. As such, it's probably not much of a shock to hear that Ubisoft has just announced a new Rainbow Six (the third for this year, incidentally). And this time it's off to Vegas, baby!

We don't know a lot about Rainbow Six: Vegas' plot at the moment, other than the fact it will be set over a 12 hour period and has something to do with a group of terrorists who have a certain *dislike* for the city of bright lights, poker machines and broken families.

Thankfully, it appears that Vegas will be more realistic and tactical than the woeful Lockdown – while the action movie feel will still be there, there will be much more room for planning ahead and controlling exactly how your assault goes ahead. Ubisoft has also promised a greater ability to freeman. For example, say you have to clear a specific room in a high-rise hotel – you could take the traditional approach and bash down the door, but you might decide to rappel down the side of the building instead.

Rainbow Six will be prettier than ever before. Ubisoft intend to take advantage of all the power the next-gen consoles have to offer. They're paying special attention to animation, making sure people move like actual human beings as opposed to semi-intelligent zombies. Nice. Very nice.

Seriously, after the hideous Lockdown, we can't wait.

CT



GAME INFO Platform PC, PS2, PS3, Xbox, Xbox 360 Publisher Ubisoft Developer Ubisoft Website www.rainbowsixgame.com

Release Date **November 2006**

Viva Piñata

You have to love childhood fads. Take Pokémon, for example – it started with a cute little TV series, but it wasn't long before Nintendo had games coming out of their arse. There were movies, clothing lines, toys, glorified Tamagotchis and God knows what else. And now Microsoft wants to do the same thing... with piñatas.

The game they want to kick it all off – Viva Piñata – will be a sim. Of sorts. Initially, you'll be tasked with cultivating a garden which will hopefully attract worms which, in turn, will encourage birds to visit your tropical paradise. Plant vegetables and you'll get mice which provide a tasty meal for snakes. There are 62 species of piñata animals in all, ranging from pigs to ponies to crocodiles, adding a sort of Pokémon 'gotta catch them all' feel to it. Of course, some piñatas will be 'bad' – they'll generally make a nuisance of themselves and dispense disgusting lollies when they die (i.e. fall apart). To deal with their troublesome presence, you'll need to find the complimenting 'good' species capable of keeping them in line.

Rare have all sorts of crazy stuff planned with regards with a piñata fad, including a Saturday morning cartoon and range of toys. We don't care about that. All we care about is the fact that come November, we'll be able to take a break from all the violence of Stranglehold and Rainbow Six: Vegas to immerse ourselves in a game that's truly beautiful, original and just plain interesting.

CT



GAME INFO Platform Xbox 360 Publisher Microsoft Developer Rare Website www.rareware.com

Release Date **Q3 2006**

Just Cause

South America seems to be the next big thing for games; with *Far Cry*, *Boiling Point* and *El Matador* all being set there. And now there's *Just Cause*, an intriguing third person action game in the works at Avalanche Studios – a new developer that's based in Sweden.

The storyline sounds interesting enough. Essentially, there's an island in South America with a corrupt government and ever-growing stockpile of weapons of mass destruction. Naturally, it's up to you as a concerned citizen to kick some arse and make the world right again. To do this you'll need to go on psychotic rampages and incite rebellion amongst the populace, occasionally enlisting the help of local drug cartels and rebel forces.

In terms of gameplay, *Just Cause* seems reminiscent of *GTA*. The island is some 32 kilometres square and dotted with cities, towns and resorts. To assist you in your exploration, you'll have over 100 vehicles at your disposal, ranging from motorcycles to speedboats to light aircraft. We must admit that we're a little worried about the idea of being able to fly planes in a game that's all about putting a warlike government in its place.

When bumping into someone who disagrees with your ideals, you can show them exactly what 'with us or against us' means with an arsenal of 25 different weapons.

Based on the Avalanche Engine, *Just Cause* looks simply wonderful. It features an advanced weather simulator; meaning as you run around doing your little revolutionary thing you'll encounter snowstorms, rain showers and thunderstorms.

Just Cause – it's Swedish for one insanely ambitious debut title.



CT

GAME INFO Platform PC, Xbox 360, Xbox, PS2 Publisher Eidos Developer Avalanche Studios Website www.avalanchestudios.se

Release Date **May 2006**

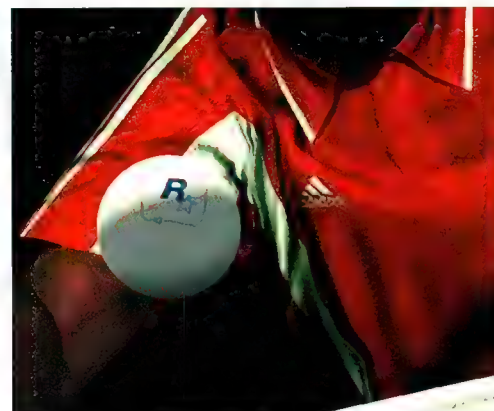
Table Tennis

When Rockstar announced that it was working on a new game, we imagined something *violent*. Note the use of italics there. We expected sex, death, drugs, murder and combinations thereof. As it turns out, their new game is all about *ping pong*.

Being developed exclusively for the Xbox 360, the imaginatively-named *Table Tennis* aims to be a serious simulation of the sport we all know and love. Rockstar believes that this is truly next-gen material, saying that the speed, intensity and physics required to make it a convincing and engaging game would have been simply possible to get right in the past. It has a point – the 360 and PS3 are incredibly powerful machines, capable of producing far more than just pretty graphics.

Despite the fact it's meant to be a serious game, Rockstar is aiming to make *Table Tennis*' basic mechanics as simple and accessible as possible. You play from a third person perspective, using the different buttons on the control pad for different kinds of shots. Like in *Top Spin*, you use the analogue sticks to control your aim. If you manage to go a while without missing the ball, your character becomes 'focused' and is able to put more power into their shots.

We're not sure why we're so intrigued by this game. After all, it's table tennis. Perhaps it's because it's Rockstar. But whatever the reason, we just can't wait for its release later this month.



CT

GAME INFO Platform Xbox 360 Publisher Rockstar Developer Rockstar Website www.rockstargames.com/tabletennis

CLASH OF THE

Logan Booker engages in some hot and sweaty gladiatorial gesticulation with Iron Lore's Brian Sullivan about his new mythological masterpiece *Titan Quest*.

We all miss Blizzard's 'hack-and-stash' RPG *Diablo* like it was our childhood, or a small dog named 'Booboo' that we lost during our childhood. Nonetheless, we've pushed on with pretenders and substitutes, but nothing has quite captured the addictive, immensely fun and infinitely repeatable gameplay of Blizzard's classic title.

Until now.

With mythology, a sexy 3D engine, and a few minotaurs in hand, Brian Sullivan and his development house Iron Lore have put together a *Diablo* for the next generation of gamers. Except, well, it's better in every single way.

QUEST FOR GLORY

'[*Titan Quest*] is an epic story of good versus evil that spans Greece, Egypt and other ancient civilizations,' explains Sullivan, who is executive producer as well as lead designer on the game. Previously, Sullivan helped create the *Age of Empire* series over at Ensemble Studios.

'I first had the idea to do a role playing game set in the ancient world when I was working on *Age of Empires*. It seemed like a perfect setting with all the great history, mythologies and architecture.'

And mythology is the name of the game for *Titan Quest* – but not simply Greek mythology. According to Sullivan, the game borrows much inspiration from both Babylonian and Egyptian mythologies, lending it a refreshing, exotic tang that breaks away from the drudgery of quasi-medieval demon slaying. While the demons are still there, along with the usual assortment of mouse-click fodder, there are many new creatures. 'We used history and mythology when we could, but most of our focus was on creating a fun game.'

Sullivan says the game itself and the gorgeous engine that powers it have been in development since 2001. Once publisher THQ came on board, it was full-steam ahead for Iron Lore. From there, the developer started hiring more people to work on the game and within the space of two years, the team had ballooned from a dedicated nine-man team in 2004 to a full-blown game-making machine of 38 in 2006.

Titan Quest features a variety of not-so-friendly creatures like our friend to the right here. Yes, he has a club, and yes, he's not that nice.

'It takes a lot of time and energy to hire people and get them set up in the company,' explains Sullivan. 'One nice benefit is [that] we hired an incredible group of people, and many of them were able to really enhance what we were doing from their first day.'

SIMPLE BEGINNINGS

Like any role-playing game, *Titan Quest* has you starting out as a basic character, weak in power and eager to enter the world before them. Although there's a little customisation of your character at the game's commencement, your choice of skills and the equipment you wear is what really defines the look and feel of the player.

'We wanted to get people playing the game as soon as possible, because that is where the fun is. During the game, the player will select two skill masteries, enhance their attributes, and equip themselves with legendary equipment. As they change equipment, the appearance of their character will change accordingly,' says Sullivan. Of course, the better the gear, the hotter your character is going to look. Iron Lore has worked hard to make the game not only visually appealing, but also to make those visuals be more than just eye candy.

So how does it play? Sullivan explains that *Titan Quest* uses the traditional 'click to move and attack' system made popular by Blizzard's *Diablo*. Unlike *Diablo* though, the ability to 'kite' – that is, attack your enemy from range while using abilities to slow or freeze them – is much easier. Forget about miss-clicking or having to deal with an awkward control system or strict positioning – *Titan Quest* is all about the slick gameplay. 'There shouldn't be any running around in circles, unless you are using a kiting strategy,' says Sullivan.

Great news on the multiplayer front too. 'The design for *Titan Quest* included multiplayer from the very beginning – it is always more fun to play with your mates,' explains Sullivan. 'You can play the main campaign either singleplayer or multiplayer, or a combination of the two. Many of our skills and skill masteries are designed to complement each other and work well in a team setting.' This is extremely good news, considering many, many RPGs forgo multiplayer altogether, which is quite the oddity considering the original RPG – *Dungeons and Dragons* – is all about working co-operatively.

Although Sullivan was reluctant to talk much more on the substance of the game, we do know it will feature a main storyline that the player can follow, along with many subplots and side-quests that can also be pursued. It's up to the player if they follow the main story, or just explore and improve their character by delving into the game's many facets. With around 70 different monsters, 1500 individual pieces of art for weapons, armour and other equipment, you'll have no hope of experiencing the game to its fullest with a single play through.

GORGEOUS AS GOD

Previously, we talked about the game's visuals, and how they're more than just pretty things for the player to look at. Iron Lore wanted *Titan Quest* to use everything at its disposal to inform the player of the strength and quality of monsters' and items. As such, better items and meaner monsters will look the part, so that +1 damage dagger won't use the same



TITANS

model as the +20 damage one. And, according to the information we've been able to gather, that nasty +20 damage dagger will look like it was forged in the fires of Hell and enchanted with the might of Hades. No more comparing statistics (even though they're still there for the power gamers) – more often than not, simply look at a piece of item, and the amount of flames/halos of light/wombats coming off it will give you a good indication of what it can do.

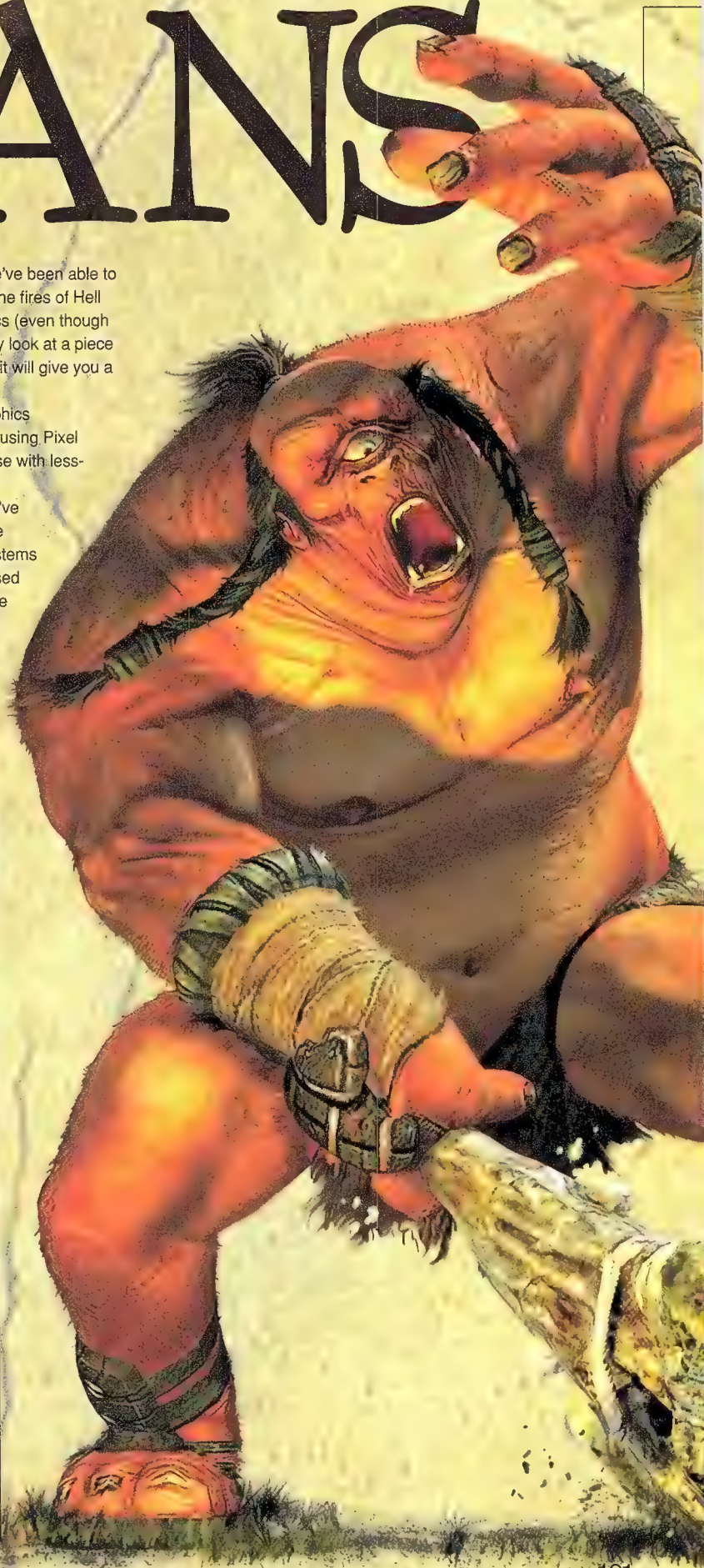
Obviously, without a powerful engine harnessing the latest in graphics technologies, all this would be hard to pull off and, while Iron Lore is using Pixel Shader 2.0 to add in the detail, PS 1.1 will also be supported for those with less-capable hardware.

'The minimum shader requirement for the game is PS 1.1, but we've designed the rendering engine to be very scalable,' says lead engine programmer Max McGuire. 'We didn't want gamers with low-end systems to feel like they were playing a different game than they saw advertised in the screenshots, so we generally stayed away from techniques like HDR which would give the game a very different look on high-end machines versus our minimum spec hardware.'

McGuire explains that Iron Lore instead chose to focus on the best effects they could use over a selected range of common hardware. So, there are the normal PS 1.1 shaders for the game's effects that everyone can use, as well as some spiffy PS 2.0



Role-playing games on the PC have really come of age in the 3D graphics department. No more crappy sprites!



No more comparing stats (even though they're still important) – more often than not, simply look at a piece of item, and the amount of flames/halos of light/wombats coming off it will give you a good indication of what it can do.

shaders to cater for the desires of the hardcore users. These shaders have all been tweaked, so no matter your video card vendor, you'll be getting the best performance and visuals your machine can deal with.

Although shader quality may vary between users, Titan Quest made sure to use normal maps – now industry standard. Usually, genres like RTS and RPG are the last to embrace graphics technologies but, with games like Bethesda's *Oblivion* and now *Titan Quest*, developers of these games are proving this is no longer the case.

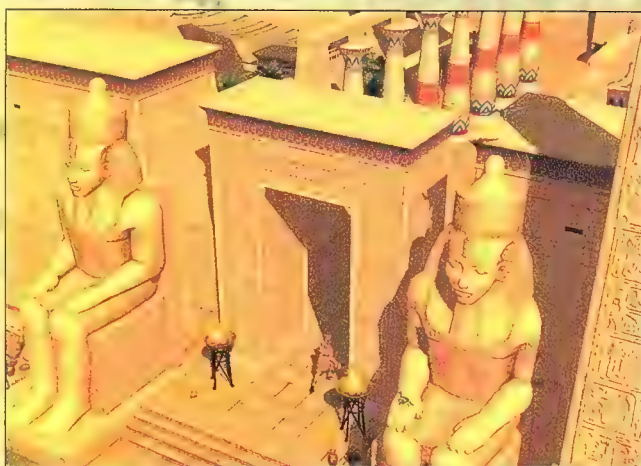
'Almost every surface in the game has a normal map on it and most also have specular maps, reflection maps, glow maps and other components to give the artists full control over the appearance,' says McGuire.

'To provide a really broad palette, we've coded over a hundred different types of materials to simulate all sorts of surfaces like the scaly iridescence on a fish and the soft Fresnel reflection on backlit skin. In addition to making the materials realistic, we've also put a lot of effort into providing beautiful and accurate illumination – the engine features fully dynamic soft shadowing on everything in the world. To make the shadows really rich and interesting, we also implemented a dual-hemisphere ambient lighting model which simulates the global illumination effects created by sunlight scattering in the atmosphere and reflecting off the ground. Because the game includes a complete day/night cycle, you'll see all of these effects change dynamically as the sun moves across the sky and sets.'

No RPG based in ancient times would be complete without zombies. *Titan Quest* is no exception. And you'll know just how bad arse they are by the amount of pretty effects that come off of them.



The particle editor for *Titan Quest* is both flexible and easy to use, allowing artists to directly manipulate special effects.



The above screenshots do a good job of showing off not only the awesome graphics engine, but also the game's myriad themes. The influences of Greek, Egyptian and Babylonian culture will not go unnoticed.



Also in this vivacious mix is a versatile particle editor, according to senior artist Brian Labore. The editor, designed in-house at Iron Lore, can be directly manipulated by artists so the effects are a true representation of what artists envision.

'The editor itself allows us to make particle systems made up of any number of emitters, each with their own parameters including animating textures, color density, real-time shadow casting lights, and more,' explains Labore. The editor can show effects working in real-time, so there's no need to go into the game to check them out. Artists can see what a spell will look like when it's cast and when it hits, allowing for on-the-spot modification. 'Along with particles, we can also add animated meshes to effects such as a flower that sparkles with pollen and blooms as you summon,' says Labore. 'Because our editor is so well built, there really is no limit to what effects we can make, which is great because our primary effects artist certainly pushes the editor to its limits!'

SOUND ADVENTURES

Titan Quest is a game about epic fantasy, which alone is great. We already know that a visually delectable engine is coupled to this fantasy, so the only question left is how it will appeal to the ears? Thankfully, Iron Lore hasn't forgotten that no RPG as thematically splendid as TQ would be complete without sweet sounds and a mythically magical music score.

'The music in Titan Quest captures the epic and dramatic nature of the game and the storyline, yet it also pays tribute to the historical musical

roots of each culture the player travels through,' says Scott Morton, composer and sound designer.

'Within Greece and Egypt, there are melodic flavors and instrumental sounds of each culture's ancient music, yet there is also a more global and overarching musical influence in the score.'

Morton mentions the use of a 'Hero's Theme', the game's theme music, which occurs throughout the game. Like the player though, the theme itself grows and changes, and parts of it are used in different ways to mark important points in the character's development, as well as pivotal events.

'There are other, more subtle thematic influences at work in the score as well; all used to tie the very different types of music in the game into one memorable musical experience.'

Sound-effects were given star treatment as well, considering the many cultural flavours the game has sampled. Blending the historical and cultural aspects of the game with the action and adventure of the game would have posed a challenge for Morton. 'The sound is designed to compliment the realism of a historical experience, yet it expands to capture the exaggerated mystical and mythological aspects of that experience as well. Along with the culturally-influenced art, architecture, stories, and magic in the game, the sound is just one part of what makes Titan Quest fantasy and history at the same time,' explains Morton.

HOMEWARD BOUND

Can Titan Quest be the new and improved Diablo we've been looking for? It certainly looks, feels and sounds the part. Even better, it will add its own distinct ideas into the mix, and years from now could be the game everyone compares the much-rumoured Diablo 3 to.

'The game will be completed this summer (end of the year),' says Sullivan. Although there are no plans for an expansion or additional content, Sullivan didn't rule them out.



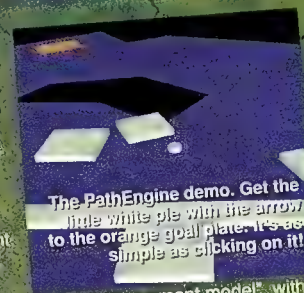
What do you do when you get attacked? Swing back with your legendary sword and kick some mythical beast butt.

Path to success

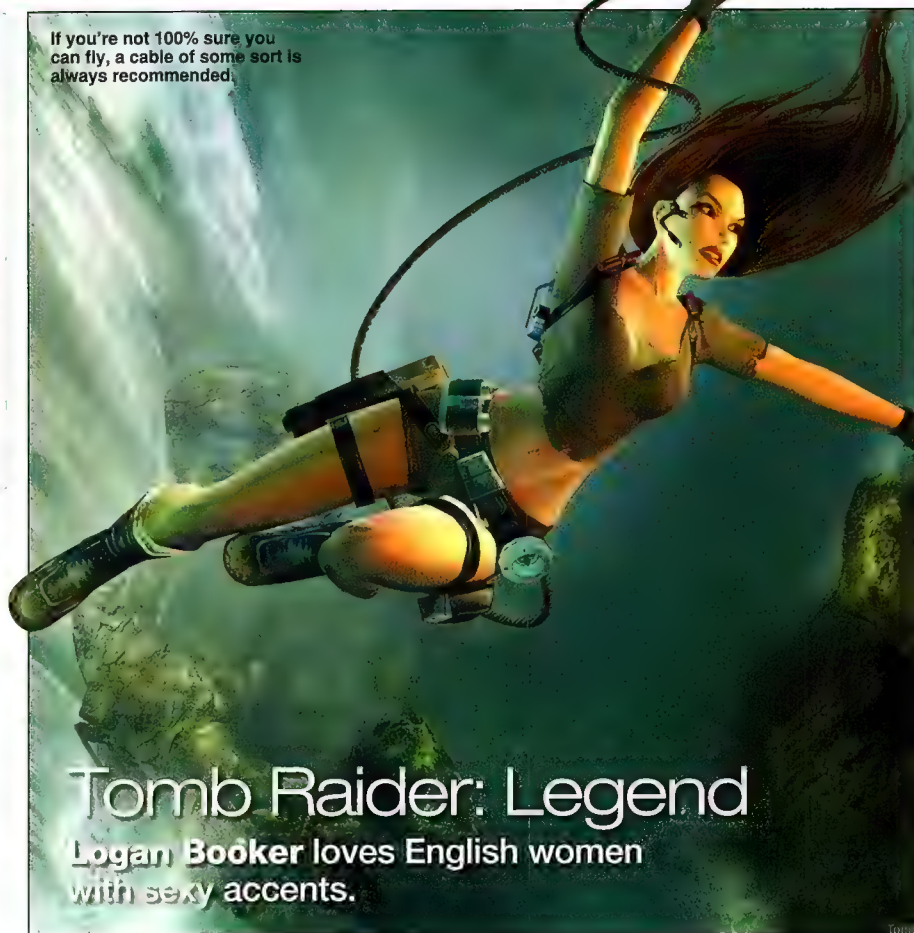
To obtain that slick feel and to make creatures move and negotiate obstacles realistically, Titan Quest makes use of a pathing middleware called PathEngine (www.pathengine.com).

According to the website, PathEngine is a sophisticated middleware tool-kit for the implementation of intelligent agent movement built around an advanced implementation of points-of-visibility pathfinding on 3D ground surfaces. At the heart of the SDK is a well-defined agent 'movement model', with pathfinding and collision both provided in tight integration against this movement model.

You can download an interactive demo of the SDK (Software Development Kit) from the company's website to try the system out, and even grab a reduced-functionality SDK for educational use. Just goes to show that the market for middleware isn't just for physics, plenty of work goes into various other intricate systems — pathing included.



If you're not 100% sure you can fly, a cable of some sort is always recommended.



Tomb Raider: Legend

Logan Booker loves English women with sexy accents.

Now we're talking! If you're looking to make a good third-person action game, there is no better teacher than Core Design. The original Tomb Raider was the world's introduction to the genre and boy, was it a great way to discover it. Although Core became a part of Eidos years ago, what remains of its design prowess is evident with the latest title in the franchise – Tomb Raider: Legend.

Staying true to the style of previous titles, Legend is easy to get into and fun to play. Although the numerous aerobic abilities available to the player through Croft may seem daunting at first, the context-sensitive nature of these abilities makes executing them incredibly simple.

Unsurprisingly, Legend has Lara chasing after a mystical artefact, this time it's one that



can serve as a powerful weapon. Having personally experienced the destructive capabilities of the ancient, evil device, there's no way she can let it fall into the wrong hands. So, it's up to gaming's most famous and buxomest export to save the day and with a great graphics engine, slick controls and a stomach you could bounce Spanish doubloons off of, Croft is well-equipped for the task.

Lara has undergone a bit of a remodelling – although still proportioned with dimensions that would make even Aphrodite jealous, she's much more realistic-looking than previous outings and her, ah, fans out there will be more than pleased.

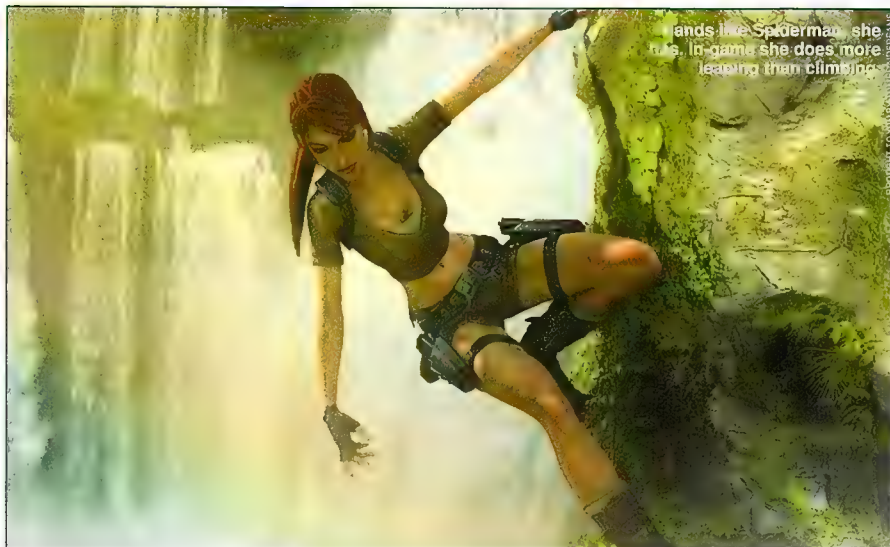
Gameplay consists of the player making good use of the gorgeous environment by jumping, climbing, shimmying, swinging, pushing and swimming. Once you have the hang of the control system, it's no trouble to seamlessly transition from a hand-over-hand expedition on a rock ledge to a daring leap through the air to a nearby vine.

Physics also make a welcome addition. No longer do objects abide by a weird set of Newtonian laws – expect to find solutions to puzzle that go beyond pushing a box onto a pressure switch (think catapults!). We guarantee this will serve as a source of frustration when you first start the game but with a bit of play time, you'll start thinking like an amateur physicist, much in the same way as Half-Life 2 demanded.

The inventory and information interfaces have been streamlined and selecting your weapon, torch or health packs is as easy as a simple press of the D-pad. Assisting you along the way are pop-ups that show which buttons you need to press in order to complete an action so you aren't left running in circles wondering what you



Lara was famous for her fish impersonations. Here she imitates a leatherjacket.



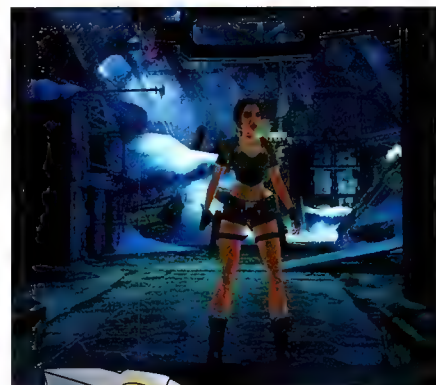
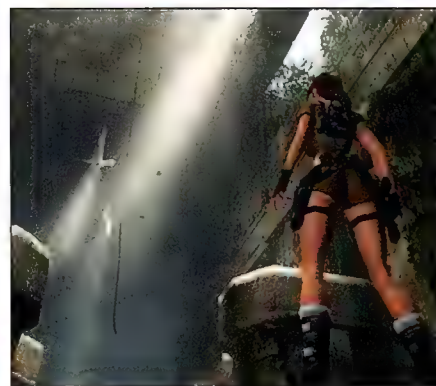
can destroy, grapple or otherwise manipulate. Weapons are also less complex – enemies will drop guns you can use, as long as you continue to scavenge the appropriate ammo off fallen opponents. As always, Lara's dual pistols have unlimited ammo, so the focus is all on the action.

The combat system takes a few fights to nut out but, once you have the strafing, locking and firing buttons memorised you'll be dodging bullets and throwing some of your own back in little time. The controls in this case are close to perfect, something that's crucial in any action game void of a first-person perspective.

The Tomb Raider series has always been famous for its puzzles and traps, and Legend is no exception. Although the difficulty isn't so bad, you'll still need to put your thinking cap on to solve the trickier ones. Oh, and the traps – taking a leaf from the awesome Resident Evil 4, Lara is placed from time to time in 'on-rails' situations where the player must hit the right combination of keys to survive. Kind of like Dance Dance Revolution except instead of losing the beat, you lose your head.

As great as Legend is, it still suffers from extreme linearity that's always plagued the series. There's only one path to get from A to B, so if you don't figure out the right combination of jumps or objects to be pushed straight away, you'll spend a lot of time sitting distraught in front of your TV. It would have been nice if the developer, for once, entertained the idea of multiple solutions to each puzzle to reward creative and lateral thinking. Because of this, Legend doesn't have an great deal of replayability, unless you're happy to just up the difficulty and charge through again. The other option is to fill out 'Croft Manor'. Here, unlockables reside including new levels, cinematics and other tidbits. The better you do on each level, the more you'll be granted access to.

Tomb Raider: Legend, while not exactly inspired, sticks like gum to the tenants of the genre. The result is a game that refines everything we've come to expect from a third-person action adventure and makes it just that little bit better. And the fact the protagonist is Lara Croft doesn't hurt either.



XBOX

Developer: Crystal Dynamics
Publisher: Atari
Website: www.atari.com.au
Platform: 1
Other platforms: PC, PS2, Xbox 360

VERDICT

Graphics; real physics; slick controls; puzzles for the thinking man.



Not much innovation; some puzzles can be frustrating; checkpoint save system.



score

8.5
OUT OF 10



PC

Developed by **Tripwire Interactive**
 Published by **Bold Games**
redorchestrage.com

Recommended **2.4GHz CPU; 1GB RAM; 128MB DirectX 9 graphics; EAX compatible.**

VERDICT



Atmosphere; excellent maps; challenging; realism.



Some minor bugs; AI won't satisfy a RO veteran.

score

9.5
OUT OF 10

Insert
incorrect usage of German
language here.

atomic



hotaward

Red Orchestra: Ostfront 41-45

Don't mention the war to
Christopher Taylor.

Sigh... another WW2 game. Cue another six hours of Hollywood silliness and fighting through Normandy. But wait a minute; Red Orchestra doesn't have any of those things. Could it be that someone's managed to do something new with this tired subgenre?

Essentially, RO: Ostfront 41-45 is a combat sim which, as the name suggests, is set on the Eastern Front. Note the use of the word 'sim' – this is a game that's all about realism. The first thing you'll notice about it is there are no crosshairs. While it's still possible to shoot from the hip, you'll have to stop moving, crouch or go prone and peer through the iron sights if you actually want to hit something. It's also possible to rest your weapon on the ground, windowsills and sandbags. The ballistics are realistic – in other words, bullets are affected by gravity. With one or two shot kills being the order of the day, firefights in RO are slow but incredibly intense. The armoury includes pistols, sub machineguns, light machineguns, bolt-action rifles, semi-automatic rifles, anti-tank rifles, grenades, explosives and Panzerfausts. Unlike in other games, working the bolt, attaching a bayonet and reloading are manual tasks.

There are also vehicles, ranging from armoured cars to lumbering tanks. While there are a couple of maps devoted almost solely to armoured warfare, RO tends to relegate vehicles to a support role – they're powerful, but still need infantry to protect them. Teamwork is essential in RO – as you advance you'll require the assistance of snipers, machinegunners and vehicles if you want to succeed. While it may not compete with

CoD 2 in the graphics department, RO is still a beautiful game. The urban environments in particular ooze atmosphere. There are just so many things which add to the immersion – tracer rounds that ricochet off metal surfaces, wonderful textures, soldiers that actually speak in their native tongue and audio that's better than anything we've ever heard in a WW2 game. It's amazing to think that the team achieved all this with the Unreal 2 engine.

There are niggles, however. For starters, the AI in the practice mode is more than a little daft – it's useful for a newbie who wants to master out the different weapons and vehicles, but that's about it. Like with the BF series, singleplayer isn't the point of RO. Secondly, the brutality might be a turn-off for some – wounded players leave trails of blood and soldiers can have limbs blown off. Some criticise the game for being hard, but in reality it's just different from what we're used to.

Provided you're prepared to accept these points, RO is excellent and far more deserving of your cash than any other war game currently on the market.



Why does Kiefer Sutherland looks like someone has mummified his head? Good question.

24: The Game

Logan Booker reviewed this game between the hours of 1:00am and 1:01am.

We're starting to believe there's some sort of nefarious additive on the border that separates movie and TV series to their converted video game counterparts.

It's a very special additive, one that unquestionably brands a converted title as being somewhat sub-par, unpalatable to the average gamer.

That additive, friends, is raw crap – piles and piles of steaming, sweaty crap.

24: The Game is, disappointingly, little more than an average third-person shooter with a bunch of gimmicky camera techniques tacked on to emulate the feel of the acclaimed TV series starring Kiefer Sutherland. Little effort has gone into making the game unique, fresh or even fun to play and, once you get a glimpse of the bland, low-res textures and vacuous environments, you'll be checking to make sure your PS2 hasn't spontaneously transformed into a Sega Saturn.

It opens well, all 24-like, with Kiefer delivering some decent narration to explain the situation as it stands. Soon afterwards Jack Bauer leads a team of crack commandos onto a boat for a drug bust. Although he mentions the need to be quiet, it takes half a second for the bad guys to realise something is down, and from then on it's all shooting robotically-animated foreigners.

24: The Game plays exactly like a finless, inebriated dolphin caught in a pool of thickening molasses. The control system is capable to start with – clicking L1 auto-selects an enemy in view, R1 fires and the left thumb stick lets you switch targets. As soon as multiple opponents appear however, you'll find the best strategy is to throw caution to the wind, run into

the fray, spin like a top and frantically click L1 and L2 until everyone is dead.

Headshots reward you with an instant kill, but the 'springy' targeting system will make this impossible to do on most occasions. Add to this every playable character can hold 400 different weapons, a billion rounds of ammo, take copious amounts of high-calibre munitions and heal themselves magically using medical packs and the action boils down to shooting anything and everything that moves.

No smart writing. No devious schemes or traps. No realism. Just heaps of renamed guns to avoid troublesome legalities. Wait, we tell a lie – there are some interesting mini-games for activities such as defusing bombs. Unfortunately, they'll account for about two percent of your total playtime.

We can forgive the use of trademark action game mechanics to a certain extent (it is a game after all, despite the attempts of the developers to convince you otherwise) but to squander a licence, and to squander it in a fashion not unlike washing your hair with the last canteen of water in the middle of a desert, burns the brain more than a cranial injection of demon fleas. The game reeks of mediocrity, a corpse on the wagon of converted games.

If you're looking for a game worthy of the 24 licence that plays intelligently like a game using the 24 licence, then this isn't for you.

If, however, you're after a third-person shooter in the same vein as a really, really bad version of Siphon Filter on a decade-old console, then 24: The Game is where it's at.

For everyone else, well, there's Tomb Raider: Legends.



PS2

Developed by Cambridge
2K Games

Website: www.2kgames.com/24

Age Rating: 1

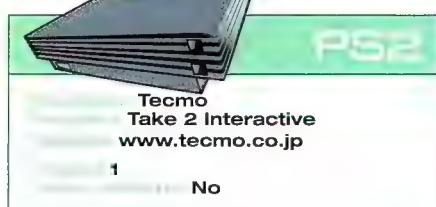
Content Rating: None

VERDICT

Some interesting mini-games. 

No smart writing, no realism, no point playing it. 

score **4.5** OUT OF 10



Tecmo
Take 2 Interactive
www.tecmo.co.jp

1

No

VERDICT



Wonderfully macabre with a twisted storyline.



Lacks the pace of an action game and the strategic depth of a puzzler.

score

7.0
OUT OF 10



We haven't seen someone shot out of a cannon like this since the day we got Bill drunk (not that it was hard) and fired him out of a ship of the line.

Trapt

Ron Osborn plays out his Japanese schoolgirl fantasies.

Once in a while a game comes along that defies categorisation. Trapt is such a game. It's not really an action game, and it's not really a puzzle/strategy game, but it has elements of each genre thrown in.

You play the role of fugitive Princess Allura, a big-eyed Japanese schoolgirl type character with the ability to conjure up deadly traps thanks to an illicit liaison with 'the fiend'.

The gameplay can be described as a sadistic version of Bomberman, where the objective is to place traps to slice, impale, crush, or otherwise dismember your would-be pursuers.

Traps are laid to either directly injure your opponents, or to 'help' them find their way into a wall full of Prince of Persia style spikes. Extra points are awarded for combos where you bounce an enemy through a series of traps for maximum impact. Points in turn can be traded between levels for more devastating traps and access to new rooms within each level.

Despite her innocent appearance, Allura is quite the killer. As each enemy falls, you're shown a brief cut scene where the recently defeated sputter out the name of their wife, child or family dog before collapsing in a pool of blood.

This has the rather unsettling effect of making you feel like you're on the wrong side. The story plays on this, and whether it's the twisting plot, characters hiding

their true intent or the poorly translated script – you are never really sure what is going on or who the good guys are.

Cut scenes abound so much so that you'll spend about as much time watching them, or waiting for them to load, as you will actually playing the game.

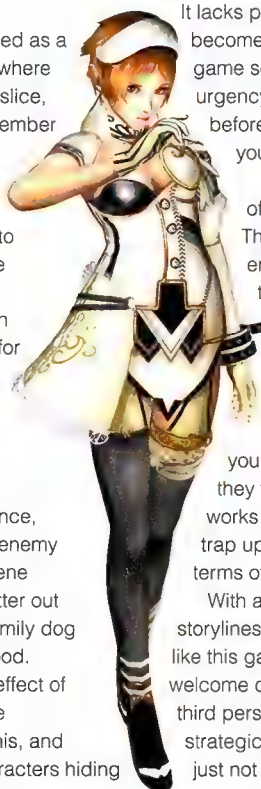
Though the premise of Trapt is somewhat dark and inviting, it does have some flaws.

It lacks pace, and though enemies do become faster and more resilient, the game seldom fills you with a sense of urgency and it is only a matter of time before your opponents stumble into your traps.

Similarly, there is little in the way of tactics that are required to win. There are never more than two enemies coming for you at a time, and they will almost always choose the most direct path to hunt you down.

Once you've established domination of the room's choke point, it's just a matter of getting your enemies to plod on through until they fall over. This technique works on almost every level, rendering trap upgrades unnecessary, except in terms of novelty.

With a soft spot for dark anime style storylines, this reviewer really wanted to like this game. And though Trapt is a welcome departure from straight out action or third person adventure games, with no real strategic depth or fast paced action, there's just not a great deal to this game.





Many would say this is the best of the first generation of Xbox 360 titles. If we pretend for a moment that Oblivion didn't happen, this would most certainly be true.

Squad-based tactical shooters are, more often than not, fiddly and unsatisfying. At the high end, hardcore variants of the genre like SWAT 4 ask too much of the casual gamer, while the light and fluffy variants like CoD 2 really are just single player shooters, with AI buddies to keep you company.

GRAW (as it's most affectionately known) fits perfectly in the middle. It offers control of your teammates so perfect it's impossible to fault. It has graphics to make a PC gamer cry, and missions so sumptuously delectable that you just won't be able to put the control pad down.

You're a hardcore Spec Ops mofo. Same old same old. The setting is 2013 so you can play with handy dandy *future guns* like the OCIW. Terrorists are still being buggers, up to no good, like presidential kidnappings. Each mission mixes up the objectives and environment so nicely. You'll never feel like you're in a rut, and you'll certainly never tire of being in the middle of the wonderful maps the developers have clearly taken so much care creating.

See, in GRAW, you really do get the feeling that you're being the full Spec Ops dude, using the high tech weapons to get the job

done. Nothing is incidental here. You may have drones available in some missions, for example. Take control of them and fly them over enemy bases, flying them lower for better resolution, but at the same time exposing them to greater risk. GRAW lets you control tanks, helicopter gunships and more. It's a beautiful tactical woody to slowly roll a tank into an enemy base and watch and listen as it eliminates pesky snipers.

Your squaddies too are a helluva tool, and GRAW lets you control them *perfectly*. The D-pad swings between assets (squaddies, air and ground assets) and order them in. Naturally, you can ask squaddies to exercise various levels of care, and to stay put and guard if that suits your needs.

FPS control pad haters can leave any prejudice aside. GRAW handles like a dream and you won't be missing your keyboard and mouse one bit. If only all console FPS games were this easy and natural to drive.

This is showcase 360 gaming, right here. Ubisoft is to be commended for taking a little extra time to polish GRAW before release. Instead of shipping this in time for the 360's launch it was held back to make it as near to perfect as it can be. It's a damn good reason

to get a 360, and helps build great faith for the future of the new console.



Ubisoft
Ubisoft
www.ghostrecon.com/uk/ghostrecon3
 Single and multiplayer
 No

VERDICT

Crispy high-def graphics across detailed terrain, squad control, overall polish.

'Savepoint' system will make you repeat some missions a few times.

score **8.5** OUT OF 10

CITY LIFE

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In-game screenshots

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interactive

A monthly tribute to the Atomic community and everything in it.



Atomicans love art. They love it more than love itself, if you could indeed love, love.

Interactive beast that it is, *Atomic* gives you the chance to get your art on display. The first way you can get one of your creative works published is via Artomic. The submission guidelines are simple: it has to be A4-sized, it has to be somehow tech-related and it has to be original. A detailed list of what you need to do and how you should submit it is available here: www.atomicmpc.com.au/forums.asp?s=1&c=3&t=1847. And if you do get published, our great friend Jane at Adobe will send you either a copy of Illustrator or Photoshop. You lucky devil.

For those of you who like to spend hundreds of dollars on a lump of metal and then hack away at it with power tools, there's Hotbox. Again, the guidelines are pretty basic – simply send three high-res images of your baby, a 150 word description and a list of six specs to hotbox@atomicmpc.com.au. If you'd prefer to sit back and enviously eye-off what other people have done, head over to www.atomicmpc.com.au/hotbox.asp. Here you'll be able to check out each month's entries and cast your vote.

If you're not too sure your work is up to scratch, head to the modding

(www.atomicmpc.com.au/category.asp?SCID=18) and graphics, art and design (www.atomicmpc.com.au/category.asp?SCID=26) forums. They're full of tutorials and knowledgeable folks who'll be able to help you out with whatever you're having problems with.

Perhaps you're old-fashioned and more interested in traditional art forms like photography and literature. That's fine, *Atomic* caters for you too. Check out IvanTheTerrible's camera club at www.atomicmpc.com.au/forums.asp?s=1&c=1&t=80682. Each week, he posts a new theme in the graphics forum and gets dozens of Atomicans to go outside and run around with their cameras.

If you're interested in writing, be sure to check out Atomic Authors (www.atomicmpc.com.au/atomicauthors.asp), and finally, there's the book club (www.atomicmpc.com.au/forums.asp?s=1&c=1&t=77779). Since January this year we've gathered once a month for tea, scones and discussion about a variety of topics.

Atomic – it's geek speak for art.

Chris loves you long time.

interactive@atomicmpc.com.au



this month



Culture Shock

Four pages of movie-reviewing goodness! *Ghost in the Shell 2*, *V for Vendetta* and more.



Input Output

Like anything delicate and soft, PCs break. Dan Rutter can help you, but only if you cough.



Artomic

Adobe wants to make your life better. Give it a hand and submit some great artwork!



Competitions

You like to win? We like to give away. Help us complete this match made in heaven.



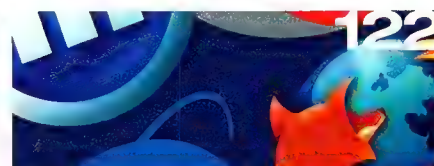
Avatar

Community, we choose you! Well, we choose someone. Found out who.



Websight

The forums are a great place to be. Get the latest status report from the front lines.

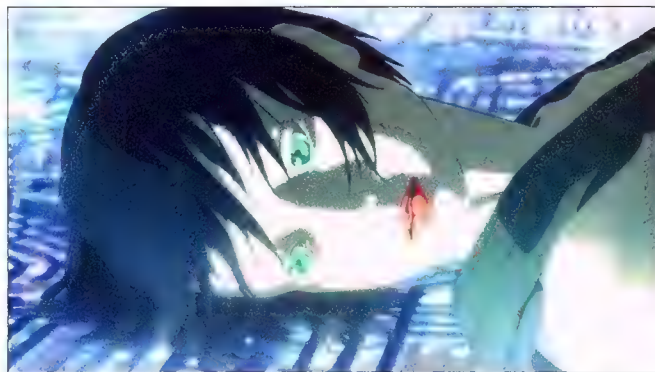
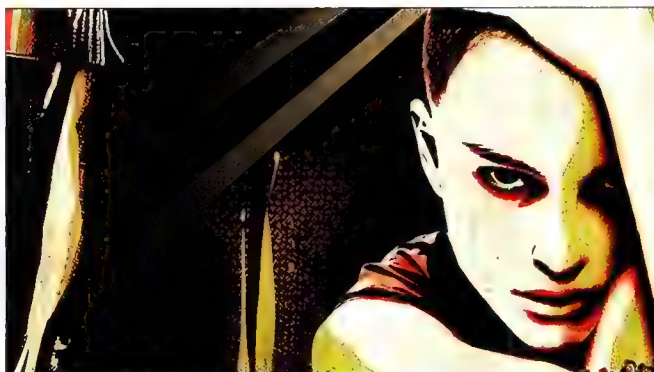


Fallout

Logan Booker can't handle a life in four browsers. Hell, he can't deal with life in one!

culture

Everything you need to know about geek film, music and literature.



V for Vendetta

CINEMA Starring Hugo Weaving, Natalie Portman. Director James McTeigue. Distributor Warner Bros Pictures. Website: vforvendetta.warnerbros.com

From the ashes of the insufferable tripe of *Matrix: Reloaded* and *Matrix: Revolutions* comes *V for Vendetta*, a fresh, well-executed film on dystopia that deposits some much needed credibility into the accounts of producers Larry and Andy Wachowski.

V for Vendetta is based on the Alan Moore/David Lloyd graphics novels of the same name, and as such plays heavily on the themes of fascism and totalitarianism, exposing a younger generation to the same influences many first experienced in George Orwell's *1984* and Aldous Huxley's *Brave New World*.

Set in an oppressed London of the future, the superpowers of the world – most notably the US – are in a prolonged civil war. After a number of terrorist attacks hit London, and in an effort to prevent anarchy from plunging the UK itself into chaos, a strict regime is enforced by the government that includes the introduction of an all-powerful secret police force called the Fingermen, curfews and the suppression of culture, homosexuality and religion.

Enter V, a mysterious character whose identity is protected by an unforgettably eerie Guy Fawkes mask, a cape, and a dashing command of both the English language and its literature. V is an anarchist at heart, bent on avenging the many wrongs done to him and others during his stay at 'correctional' facility, and freeing the inhabitants of the UK from its governmental shackles. Evey Hammond, a young woman born to politically active parents, finds herself sucked into V's world after he saves her from assault by the Fingerman. Although for most of the movie it is Evey who is influenced by V's world view, Evey herself eventually fundamentally affects V's perfect plan for rebellion. The movie plays a lot on the concepts of fate and destiny.

The film itself is smooth and well-paced, although it does become a rough ride towards the end as the action and story seek to drown the last quarter of the film. The end is perhaps excessive and unbelievable considering the consistency of the rest of the film and some character developments are bludgeoned home, but overall you'll leave feeling satisfied – unlike the ending to a certain trilogy about robots taking over the world. Not that we're going to dwell on that, but it did make us a little hesitant about seeing *V*.

Although creatively marketed, a delayed release has done much to soften the impact and *V for Vendetta* may find itself a little short on the box office takings, despite being a really good movie.

There's no doubt however that the DVD will find a cult following and should provide the Wachowskis a well-deserved, if overdue, return on their work. Let's hope their next film is as good.

LB **score** **8.5** OUT OF 10

Ghost in the Shell 2

DVD Starring Aki Kaurismäki, Atsuko Tanaka. Director Mamoru Oshii. Distributor Madman Website: www.gofishpictures.com/GITS2

According to director Mamoru Oshii, *Ghost in the Shell 2: Innocence* is not a direct sequel to the original, rather, it's a quasi-autobiography and an animated depiction of various philosophies on the human soul and personal identity. The result is a vivid, engaging anime that will appease John Milton, Isaac Asimov and Philip K. Dick fans alike.

For those who haven't seen the original (highly recommended, especially if plan on checking out *GITS 2*), *Ghost in the Shell* is set in a futuristic world where cybernetics is common place. While full-body enhancements are restricted to the rich and the military, most people are equipped with an 'e-brain' that allows minor enhancements to intelligence as well as telepathy-like communication.

The main protagonist of the first film, Major Kusanagi, is part of a secret government organisation called Section 9 that deals with cybernetic-based situations that pose a threat to national security or political climate. Kusanagi and her colleague, Batou, are completely cybernetic, the only remnants of their humanity being a few brain cells and their 'ghosts' (or spirits). When Kusanagi goes missing at the first film's conclusion, the story picks up with Batou in *Ghost in the Shell 2*.

Batou is sent to investigate a series of murders, the culprits all the same type of 'gyrobot' from a company called Locus Solus. After committing their crime, the bots promptly self-destruct, leaving investigators with no evidence or a chance to analyse the bots for defects. The gyrobots themselves are pleasure robots, built like, and given the appearance of, dolls. As the movie advances, Batou draws closer to finding out why the robots are driven to murder, as well as locating his lost colleague Kusanagi. The plot of *GITS 2* however, while important, plays a mostly secondary role to Oshii's philosophical meanderings.

There are a few long characterless scenes in the film that use a great deal of computer-generated imagery. Why these scenes are present is as much a mystery as the death-dealing ninja pleasure robots in the film. The scenes are more than a little self-indulgent and appear to serve no other purpose than to extend the film's duration. Not that the film needed extending – the bulk of the story takes more than enough time to play itself out and cutting these longer scenes from the final would not have taken away from the film at all.

As with the original, action makes an appearance but is often prefaced with sizeable amounts of dialog and fans of more 'explosive' anime may find *GITS 2* tiresome, or even confusing.

If you can, however, endure the indulgence, *Ghost in the Shell 2* is very entertaining and thought-provoking, and worth the decade-long wait. A must see for fans of the original.

LB **score** **9.0** OUT OF 10



The Proposition

DVD Starring Guy Pearce, David Wenham Director John Hillcoat
Distributor Sony Pictures website www.sonypictures.com

It's not hard to see why Australian cinema is often accused of being a little... lacklustre. For every *Castle and Gallipoli*, there are a dozen uninspired dramas. But 2005 really did deliver – *Little Fish* was excellent and *Look Both Ways* was by all accounts superb. And then there was *The Proposition*, our attempt at a serious western.

The Proposition is about the Burns gang – three bushrangers who also happen to be siblings. It opens with the two of them, Mike and Charlie (Pearce), being captured by Captain Stanley, head of the local police. Charlie is given a choice – he can either wait for Mike to be hanged or he can save him by riding into the bush, finding his older brother Arthur and killing him. While all of the brothers have done their fair share of naughty things, Arthur is by far the worst – he's killed people, raped women and is involved in all sorts of anti-social activities. As the story progresses, we not only watch Charlie come to terms with the fact that he has to kill a relative, but the controversy that the deal between him and Stanley attracts from a community that's been tormented by the gang for years.

The story is interesting, but at times it feels as if it's focused too heavily on the relationship between Stanley on his wife. A number of the characters – including David Wenham's Eden Fletcher – aren't really developed at all. They seem like cardboard cut-outs as we're only ever shown one side of their personality.

Director John Hillcoat has done an amazing job with *The Proposition*. The setting is beautiful, the camerawork is excellent and the violence is shockingly brutal. The writing dances between good and merely passable – for every powerful line there's another that sounds awkward and unnatural.

While it's a little slow in the middle, *The Proposition* is an enjoyable film and definitely one of the better films to come out of Australia in recent years. If you're after something that delves deep into the lives of each and every character, though, we'd suggest you check out HBO's *Deadwood* instead.

CT

score **7.0**
OUT OF 10



Machuca

DVD Starring Matias Quer, Ariel Mateluna Director Andres Wood
Distributor Madman Website firewallmovie.warnerbros.com

Growing up in Santiago, 11-year-old Gonzalo Infante is privileged. His parents own a nice house, a colour television and they can afford to send him to one of the best private schools in the country. In short, he's never known hardship or financial difficulty. That is until he meets Pedro Machuca, a boy from a nearby illegal shantytown. Pedro and a few others have been brought into the school by Father McEnroe, the school's headmaster and priest who intends on making an active effort to help the poor.

Living in a glorified tin shed with his mother, sister, uncle and older cousin, Pedro has never experienced the kind of luxury that Gonzalo has come to take for granted. He's never had Adidas shoes or the latest fashions. He can't even afford a school uniform. Naturally, the two form an unlikely friendship, exploring each other's worlds with wide-eyed fascination.

On one level, *Machuca* is a fairly generic albeit well told coming-of-age story. The boys are learning to assert themselves and beginning to experiment with girls. They're also starting to understand the political crisis around them – the rich are starting to protest in the streets, hoarding food and banding together to fight against the communist government. Meanwhile, the poor are supportive of their leader, realising that should their nation become capitalist they'd be in an even worse financial situation.

This film could have been a dry, impersonal political statement, a two hour marathon of praising socialist ideals while rubbishing capitalism, but it's not. Rather it shows the negatives of the economy in general, particularly in terms of how it can split society in two.

The script is wonderful and consistent. The power of the dialogue is clear even with subtitles and Andres Wood's directing compliments it beautifully. Interestingly, as the story progresses the camerawork changes – early on in the film it reflects the innocence and naivety of childhood, but towards the end it becomes far more cold and cruel as it highlights the brutality of the new capitalist government.

Machuca is beautiful, brilliant and, towards the end, shockingly brutal. It's definitely worth a look.

CT

score **9.0**
OUT OF 10

criticscorner

PSP**Outrun 2006: Coast 2 Coast**www.sega.com Sega

Arcade driving at its best. Not much to it, just drive your car, keep it on the road, and accomplish various tasks such as passing cars, not crashing and driving in-between markers for points and rankings. Fun for a quick blast but not much in the way of staying power.

LB

**PSP****Worms: Open Warfare**www.thq.com.au THQ

Now, this is the Worms we all remember. With slick graphics, an easy control interface and options galore, you'll be shooting, stabbing and dynamiting worms non-stop. Grab it if you love the series and hate the rubbish 3D versions on console.

LB

**PSP****Key to Heaven**www.scee.com SCEE

What looks like a simple Final Fantasy style RPG with real-time fighting hides a complex interior where you can configure and customise your attacks to your play style. It's very on-rails to start with but eventually opens up into an enjoyable romp.

LB



Fixes galore

Daniel Rutter needs to help you.

Like a vampire, he feeds on the problems of others, feasting until his cute little stomach is full and ready to digest your concerns. Give him a few more to nibble on at io@atomicmpc.com.au.



I/O OF THE MONTH

Liquid sodium would rule

I As most Atomicans know, heatpipes are fluid-filled vessels that are very effective at transferring heat away from a given spot. I'm just wondering, what is this magic fluid inside the heat pipes? It must be some special stuff with an excellent specific heat capacity in order to absorb all that energy in an efficient manner.

Michael Shannon

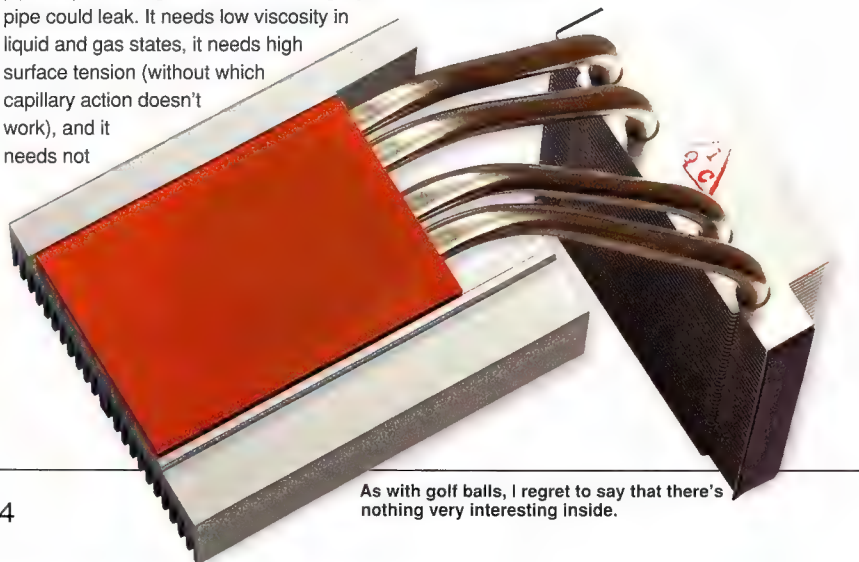
O Heatpipe fluid does indeed need to have good thermal qualities. High latent heat of vaporisation is important, so that the fluid absorbs plenty of energy as it turns into gas and heads for the cold end of the pipe (heat pipes aren't actually filled with their working fluid), but there are various other requirements.

Heatpipe fluid mustn't react with, or seep through, the material the heatpipe's made from. It mustn't change qualities unacceptably when hot or cold. It must 'wet' the wick and/or wall of the heat pipe properly – otherwise the pipe will only work one way up. It needs pretty stable vapour pressure over the intended temperature range – too little pressure and the pipe stops working; too much and a lightly built pipe could leak. It needs low viscosity in liquid and gas states, it needs high surface tension (without which capillary action doesn't work), and it needs not

freeze in the operating temperature range. All of those requirements have led to various more or less exotic fluids being used in heat pipes made for different temperature ranges. Helium, nitrogen and ammonia for super-cold, very cold and cold pipes, respectively; sodium, lithium and silver at the other end of the temperature graph. Methanol, ethanol and acetone all work OK for computer-ish temperature ranges – below 10 to above 100°C. And acetone's hell on plastic but fine with metal, so it'd be an excellent choice for low cost heat pipes made from uncoated copper, if not for the existence of water.

Water has ticks in all the right boxes for use in the computer-cooling temperature range, which is why people use it in liquid cooling rigs. And it's harmless to humans, which can't be said for acetone, and won't eat copper and so can be used in cheap pipes. Water expands when it freezes, but there's lots of room for it to do that in a heat pipe, and a pipe that's cooling a chip doesn't need to start working until it's warmed up well past freezing anyway.

I'm not sure what proportion of the heatpipes used to help cool consumer electronics contain water, but I'll betcha it's most of them.



As with golf balls, I regret to say that there's nothing very interesting inside.

IOOTM wins a Logitech MX510!

Oh mousey. Mousey, mousey-mousey. How we love you like the precious thing you are.



Left foot on... yellow!

I I have heard that when you're installing a CAT5/5E/6 network anywhere, when you're terminating into sockets on your wall (or comms cabinet), you should leave as many twists in the pairs as possible where you punch down.

This is supposed to give you better performance than if you untwist back to the outer insulation.

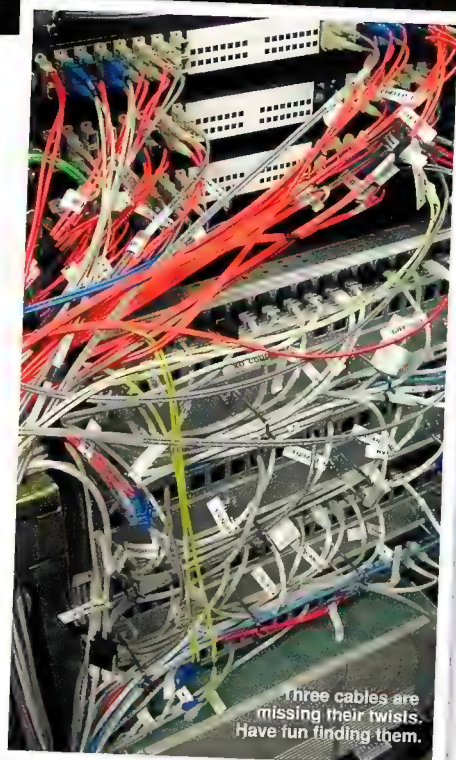
What I wanted to know was – is it significant?

Steven Doda

O Plain unshielded multi-conductor wire is not meant to be able to transmit high bandwidth signals over a significant distance. It took us humans a while to figure out how to trick it into doing so – before we did, high bandwidth always meant coaxial cable. The separate twisted pairs in Unshielded Twisted Pair cable look kind of haphazard if you strip off a length of the insulation, which encourages people who're wiring an office (or just saving a few bucks by making their own network cables) to think that it's okay to straighten some wire out to make it neater at the plug (or wall socket, or patch panel) end of a cable. The messiness of the twists (or 'lays') is by design though. They're deliberately made to be different lengths to evenly reduce crosstalk between conductors, and external noise reception, at various frequencies.

You don't wreck a twisted pair cable's noise and crosstalk resistance if you untwist a couple of inches of it at the ends, but you do significantly hurt the cable's signal transfer ability, which can easily result in data transmission errors.

A marginal cable may work okay in a network – indeed, many networks past and current have



Three cables are missing their twists. Have fun finding them.

some dreadful wire and/or connections in there, but transmission errors will make things slower at best, and can occasionally actually result in uncorrected flipped bits in transferred data.

More importantly, of course, they can hurt performance in things like online games, when you're using a protocol like UDP that doesn't have any error correction!

Because of the haphazardness of the twists in UTP cable, though, it's easy to avoid these problems even if the cable untwisted when you stripped it and got it ready to be punched down. Just identify the pairs in the stripped cable, and put another twist or two in 'em on the way to the contact block before you punch down.

Problem solved.

10W-40 computing

I was reading about the Oil PC featured in a previous edition of *Atomic*, and I was wondering, can you use mineral oil in a water cooling system instead? You know, just in case there is a leak, my box won't get fried.

William Clark

Yeah, but if there's a leak and a spark, it'll burn your house down!

Actually, oil cooling would be feasible, with some caveats.

First: Oil, like most other Brilliant New Coolants that people think of, isn't anywhere near as good at transferring heat as water. Since a lot of water cooling systems have plenty of extra capacity, though, this isn't necessarily a big problem.

Second: You'd have to change a few parts.

Silicone rubber tubing will be eaten by oil, so you'd have to change to Tygon or something. A water pump won't be able to move the much more viscous fluid, so you'd have to switch

to one that can – maybe a peristaltic pump. Anything that restricts water flow a lot will restrict oil flow a whole lot, but modern 'open' water blocks will probably be okay.

Given that leaks in water cooling systems are (a) not hard to avoid and (b) often not actually terribly dangerous – you just shut the computer down, wash any damp parts with demineralised water, dry somewhere warm and hope for the best – there's not a lot of reason to do this.

But, y'know, who needs a reason?!

Road warrior

What is the best mobile graphics chipset available at the moment?

I understand about the price vs performance issue, and thus that the third-most-expensive chipset would be the best, so a single response is all I'm after – I trust you. THAT much!

Kevin Lurie

You'd think it'd be easy to answer this question. Just compare the fastest mobile chips from the only two players in this game (ATI MOBILITY RADEON X1600 and NVIDIA GeForce Go 7800 GTX, as I write this).

The joker in the pack, though, is that most people don't plug laptops into external monitors, so you're usually stuck with the resolution of the standard screen. That's probably not going to exceed 1920 x 1200, and may be considerably lower. The screen also isn't going to be bigger than a 17" diagonal, unless you've managed to get hold of one of those super-aircraft-carrier ('nuclear carrier'? 'CVN?') 19-inches.

Super resolution on a small screen means high FSAA levels are pretty much pointless; lower resolution means much the same rendering load including high FSAA.

What all this means is that the monstrous pixel painting rates of the current top level mobile chips won't necessarily be used, unless you wind up all of the sliders past the point where you can actually see a difference.

That said, the Go 7800 GTX is faster than the MOBILITY RADEON X1600, and more widely available since it hit the streets earlier (recently, NVIDIA's been much better than ATI at actually having chips to sell when they 'release' them). But either should be more than adequate.

Actually, you'd probably be very well pleased with an adaptor at least one notch slower, provided that laptop had the other stuff you wanted.

The other 44 versions didn't work

Inquiring minds want to know what the '45' in RJ-45 means. Or, for that matter, the '11' in RJ-11?

Carol Tandberg

Sorry to be a wet blanket, but it stands for nothing in particular. It's just the number Ma Bell was up to when she wrote that part of the Universal Service Order Code (USOC, pronounced 'you-sock').

Or, as seems more likely, when a nameless swirl of primal chaos vomited forth that section of the Code into our universe.

More info here: www.wikipedia.org/wiki/Registered_jack

As easy as 1, 2, 7.276371092...

I have been tearing my hair out over a so-called 'easy to install', 'plug and play' USB to IDE adaptor. When I connect it up, the result is 'no USB Mass Storage device' in my computer. I have ripped out the USB in Device Manager and restarted the PC so Windows rebuilt it. Tried it in Windows XP and 2000. Also tried three different hard drives. It keeps installing an 'AVX CD/DVD-ROM SCSI CdROM' device, which appears in Device Manager. Are there any drivers required for these things?

Brian Stevenson

That device name is what Alcohol 120% calls its virtual CD/DVD devices – you know, apparent 'drives' that are actually image files on disk – great for minimising application load times and doing all sorts of nifty stuff.

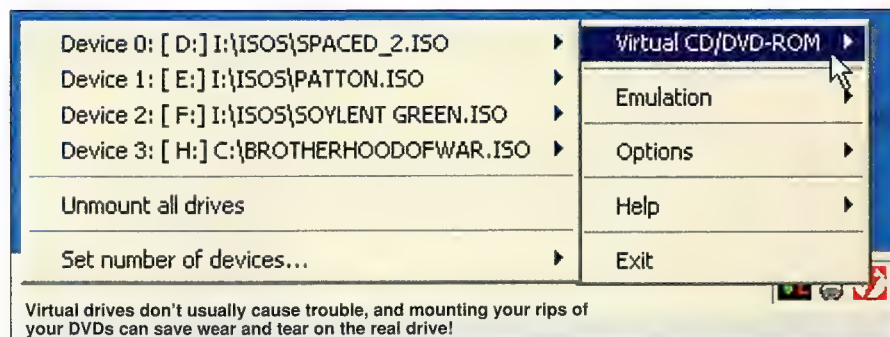
So my first guess would be that something in the Alcohol installation is screwed up, or you're seeing the Alcohol device and mistaking it for a new device created by plugging in the USB adaptor, which could just be stone dead.

Yes, as dead as a stone.

If you're seeing the AVX device name on machines that don't have Alcohol installed, then you're into the Twilight Zone and there's not much I can do to help you there.

I haven't seen this problem myself either, but I use Daemon Tools for my virtual drive needs.

(Brian got back to me. Uninstalling Alcohol did, indeed, solve the problem. Damn those silly virtual drives getting all up in your space.)





**WIN! Adobe Photoshop CS 2!
Worth \$1450!**

I created this car in 3ds Max and rendered with Mental Ray. It took approximately two months to make with about 30 minutes of work each day.

- Nathan

Create the winning Atomic and get the latest versions of Photoshop or Illustrator from Adobe (www.adobe.com.au/explore)! Email a low res preview of your masterpiece to:

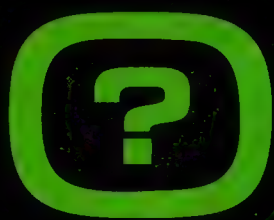
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5x copies of Tomb Raider: Legend for PC

Ah, Lara. How we've missed you! She's had a bumpy ride in the past but now she's back in perhaps her greatest game yet – Tomb Raider: Legend. Truly, there's no better babe to show you the ropes (literally) of the 3D action adventure genre than Ms. Croft. Lucky for you guys, we have 5 copies of the PC version of the game to give away, thanks to David at Atari (www.atari.com.au). Just answer the question below for a chance to win!



Which developer took over from Core Design for Tomb Raider: Legend?



3x Western Digital WD5000KS 500GB drives

You won't find storage like this just lying on the street, unless that street runs through the middle of a drive fabrication plant, in which case your chances are somewhat higher. If you'd like to enjoy a 500GB drive without fanging it through a fab, then enter this competition to win one of Western Digital's 500GB Caviars, valued at \$519 each! It does its data thing at 7200rpm and packs a nice 16MB cache – you'll have a hard time finding something as good. Thanks to Western Digital for these great drives!



How many bytes are there in a 'gibibyte'? (Yes, that's *gibibyte*, not *gigabyte*.)

To enter visit www.atomicmpc.com.au/competitions. The closing date for entries is 14 June 2006. Winners will be announced in *Atomic 67*.

Atomic 63 winners: 3x Microbric Viper Standard kits Q: What is the name of the actress who plays Boomer in the remake of *Battlestar Galactica*? A: Grace Park. R. Maloney, Wudinna SA; R. Bartholomew, Cranbourne East VIC; M. Sofinowski, Southport QLD. 3x Official Street Fighter Anniversary Edition arcade sticks Q: What is the name of the dangerous martial art practised by Ken and Ryu? A: Ansatsuken. T. Penman, Quakers Hill NSW; W. Szekeres, Winchelsea VIC; I. Lazarus, Ormond VIC. 3x Solio solar-powered batteries Q: What word beginning with 'P' is the other name given to 'solar' cells? A: Photovoltaic. R. Fesus, Wollongong NSW; A. Felton, Edgewater WA; J. Tandy, Woronora Heights NSW.

Terms and Conditions of entry. 1. The promoter is Haymarket Media of 52 Victoria Street, McMahon's Point, NSW 2060. Promotion period is from 9.00am on 10.05.06 until 12.00pm on 14.06.06. 2. Entry is open to residents of Australia and New Zealand. Management and employees of Haymarket Media and their immediate families, and any advertising, marketing or promotional firms associated with this promotion are not eligible to enter. 3. Enter by posting or emailing forms to Haymarket Media. 4. The draw will be held at the offices of Haymarket Media at 5.00pm on 14.06.06. Winners will be notified by mail and published in *Atomic 67*. The prizes are not transferable or exchangeable. 5. The judges' decision is final and no correspondence will be entered into. 6. The promoter reserves the right to publish the winner's name and suburb for promotional purposes. 7. All entries will become the property of Haymarket Media.

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...favourite game character?

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fallout

Funnies and humour from the fallout zone

My life in four browsers

Logan Booker gleefully awaits the cleansing of the Internet by fleas, boils and locusts.

I call it the Curse of the Web Designer. My friends just call me an idiot.

Of course, I ignore them. What could they know about the tribulations of style sheets, tables and fonts?

Nothing!

I'd spit on them in disgust if I wasn't so disgusted by the act of spitting. These days I just carry around a squirt bottle of water and surreptitiously discharge when my mood dictates. And it dictates a lot.

For the less intuitive, I'm talking about the massive mess of code known as the Internet and the numerous portals that we use to gaze upon its Gordian grandness. In this most heterogeneous of technological travesties resides a foundation so incongruous that the blood vessels in my temples literally pulsate in displeasure when forced to sift through its ill-constructed content. Hence, I live my life by the whims of four browsers.

My first taskmaster is Internet Explorer, which, if it had existed during the time of the Exodus, would have accounted for at least one of the 10 plagues of Egypt. Despite its evil being measurable in units of radical apocalypses, Internet Explorer is, unfortunately, the One Browser that all other browsers must conform to. The Internet, designed around this burning crucible, shows signs of structural instability whenever

you turn. In an amazing bout of selfishness, Microsoft decided to formulate its own brand of HTML and CSS, casting standards to the wind like the contents of a chamber pot. Every single poorly rendered page is like copping a face full of excrement from that vile crucible. Learning the nuances of Internet Explorer is torture of the highest order and I'd rather be taught meteorology by a cyclone.

Desperate to be at least partially rid of Microsoft's deformed application, I downloaded Firefox. At last, a browser that conformed to standards and on top of that featured tabbed browsing and extension support. It even had a cute little fox for a mascot that looked constantly aflame. Although the thought of a creature as noble as the fox running around a forest on fire was somewhat distressing (not only to me but also my pet fox Garry), I was otherwise in heaven.

For three days.

Why does the simple act of initiating a download take most of the day? Firefox' excuse for a download manager should be drawn and quartered; if indeed methods existed for disembowelling an executable. A lack of an alternative and my worrying addiction to tabs left me with few avenues of relief. So I chose Firefox for general browsing and Internet Explorer for the downloading. I was as efficient as running a Boeing 747

on jet fuel made of crushed diamonds and Tasmanian tigers.

Again, I searched for another browser. After waiting for some two seconds, Google returned the result 'Maxthon' and it seemed my problems had been solved.

I knew from the get-go that Maxthon was simply a skinned Internet Explorer, but the allure of tabbed browsing dispelled any misgivings of its heinous heritage. My life seemed complete, until a few days later I pressed my middle mouse button to open a link in a new tab.

There was no tab, just the dual-arrowed circle of the mouse scroll. I screamed like a banshee, but no one heard me, mainly because I screamed in my head. As I clicked on that link with growing intensity, and watched the little circle dance around my screen like an intoxicated, epileptic ballerina, my hopes for the perfect browser dissipated.

“Microsoft decided to formulate its own brand of HTML and CSS, casting standards to the wind...”

With nothing to lose, I downloaded my final option – Opera. For some time I'd avoided its alluring presence – mainly because until recently it was ad-supported. Now, with the ads gone, there was nothing to stop me from giving it a go.

Boy, it was marvellous. Tabs, session saving, BitTorrent support and great standards compliance almost made me lick my screen. Finally, I was free of the shackles of Internet Explorer, Firefox and Maxthon. At least, that's what I thought.

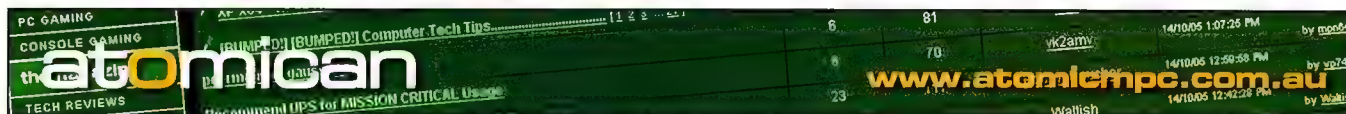
Unfortunately, not everyone has discovered the greatness of Opera and I'm left staring at four different browsers in my task bar. It makes me cry every so often, as I think my web pages in each browser's rendering engine, implementing CSS hacks after CSS hack, but I take comfort in the fact that one day we'll live with an Internet that looks the same no matter the browser.

That, or the 10 plagues will wipe the world clean and we can start again.

The Internet continues...

web

A hands-on look into the awesome Atomic community.



Hulkster Hey mate, how was your Easter?

Moz *groan* I ate that much chocolate I'm sure my blood's turned a horrible brown colour.

Speaking of blood, a good number of Atomicians decided to give more than eggs this Easter. They gave up their time and more importantly the green stuff in their veins. Events were organised in Melbourne, Sydney and Perth and no doubt more are on the way.

<http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83974>

I want to know what started all of this insanity!

Hulkster That would be freespace, one of Atomic's resident nice guys. His doctor gave him some bad news, but that hasn't stopped his positive attitude towards life.

<http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=82869>

He's a born battler and will pull through with flying colours. An honest-to-Godden inspiration to us all! Sic 'em Rex!

I noticed that TransmissionDump's blood was siphoned back into the petrol tank to get them all home again. Nearly 70 percent proof apparently. Oh, and that reminds me - don't suppose you know whether he ever did get his computer?

<http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83809>

Moz Knowing TD, it's probably out hitting

on Apple Macs as we speak. Before we stray too far from good causes, the lovely Myra'Jai decided to go all out with 'Shave for a Cure' this year. Setting the bar at \$500, she's offered to go the complete shave if Atomicians can raise the money. When last I looked, it was up near \$900! Baldness, here we come! Go you good things!

<http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83795>

Did you see MrsWallacy and her clan went on one of their famous camping adventures? This one was no less entertaining. Apparently, Wallacy decided to stroll over to a neighbouring tent and hit on some lesbians. Silly bugger.



<http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83848>

Hulkster That's why I don't drink anymore. Hitting on two lesbians while your wife is in the tent next door? I'm surprised he wasn't tied to the bonnet on the four wheel drive for the duration of the trip home.

Another reason I don't drink is because I can't afford to. Eating was near impossible on my wage till I saw this thread by QuadLex. He's given us all the ins and outs of how to feed yourself on a tight budget.

<http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83567>

Now I don't have to lick the apples in Woolies anymore. Or smuggle tins of peaches out in my pants.

Moz They're a touchy bunch in that place. I remember 'watering' their plants once and being chased out of there by four angry staff members yelling something about my mum. It wasn't good, Hulks. But I'll tell you what is good... and gold. **Atomic** Gold that is. Some of the very best of what we are about, here on the forums.

<http://www.atomicmpc.com.au/atomicgold.asp>

Hulkster If you're thinking that this place sounds crazy, it is. All happy crazy and full of love and fun. Get yourselves online and join in with the shenanigans with the Atomic community! Otherwise, we'll have to hunt you down and tape your fingers to your keyboard!

Moz He's taped worse.

post of the month

At Atomic, we seem to have more than our fair share of ex, current and planning-to-be armed forces personnel. Over the years we have accumulated many wonderful tales of their experiences.

Most recently we've been enjoying a trio of tales from our good fellow Atomican mattnelson:

Stories from an ex-Infanteer Part 1
www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83586

Stories from an ex-Infanteer - Part 2 - I can fly
www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83663

Stories from an ex-Infanteer - Part 3 - Incoming!
www.atomicmpc.com.au/forums.asp?s=1&c=1&t=83743

These three combine forces to make POTM 65. They are all wonderful reads and show Matt's writing talent off like a trophy. A Logitech G5 trophy!

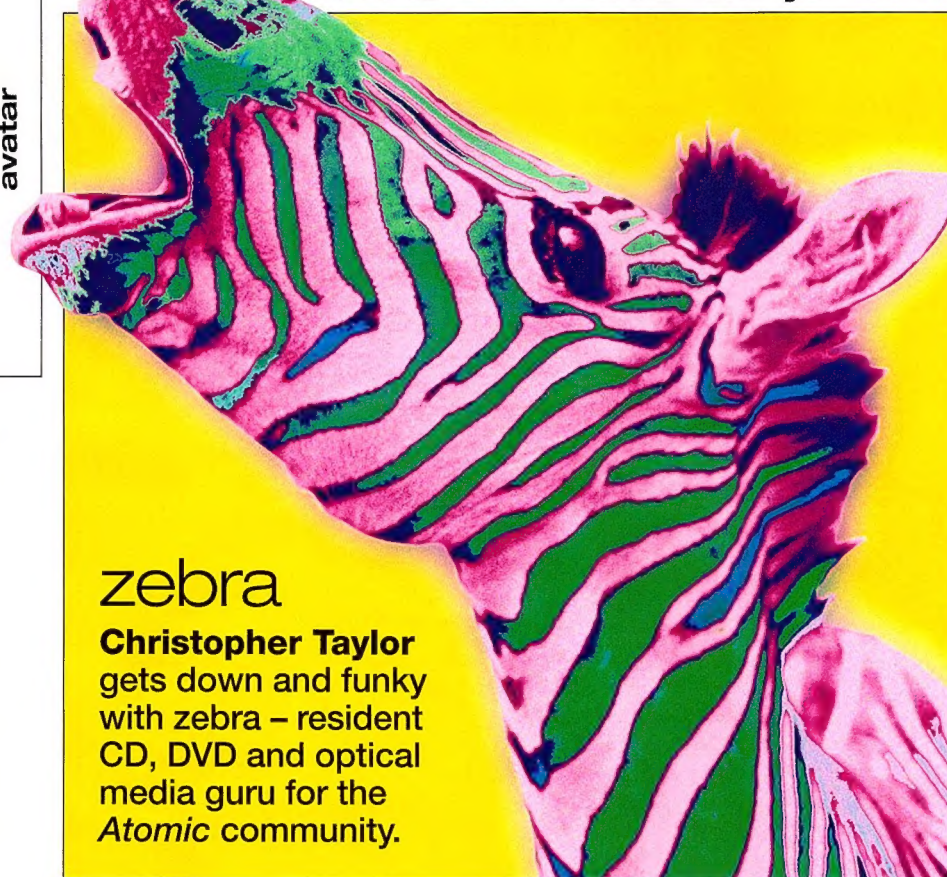


Every **Post of the Month** wins a fabulous Logitech mouse from the brilliant people from Logitech.... Huzzah!!!!



avatar

Tell us who you are.



zebra

Christopher Taylor gets down and funky with zebra – resident CD, DVD and optical media guru for the *Atomic* community.

When it comes to asking for optical drive advice on the *Atomic* forums, zebra is the guy to turn to. He's also the founder of **speedlabs.org**. We decided to have a word to him.

atomic So zebra, why are you a member of the *Atomic* community?

zebra I'm a member of *Atomic* primarily for historical reasons. My good friend from university, Zeddicus (a former staff writer) introduced me to *Atomic*. From there, I kind of fell in love with computing/technology and the lifestyle... making lots of mates on the forum along the way. It became 'home base' for me. A good way to sum it up might be that I feel *Atomic* is the place 'zebra' was born.

atomic Can you tell us a little bit about the real zebra?

zebra I guess the best way to describe my life is one of technical obsession. I live for technology. I work with supercomputers and high performance computing for a living. On the side, my first love is storage technologies. In my downtime, I enjoy music from around the world, going to concerts and, as you might have guessed, the technology behind the art of sound engineering.

atomic What sort of things have you done in the *Atomic* community?

zebra I guess the first major thing I've done for *Atomic* was in 2001-2002. I created some firmware modifications for certain DVD burners that kind of stopped the world... and made

Atomic the centre of the heat. It was kind of scary for me at the time... as the whole subject matter and concepts being dealt with were touchy at best. Either way, it really put that little green tech forum on the map!

atomic In the tech forums you're well-known for your expertise when it

comes to optical drives. Just how did you learn so much about them?

zebra That started when I was about 12 years old. My family got our first CD burner. It was a joyous day for all concerned, as these things were not common gear back then. I was so happy, I started using my burner at every chance – doing everything I could with it, learning all I could about it. Until one day, I popped a disc in that didn't work correctly. To put it bluntly, this shit me off badly and I wanted to find out why it wouldn't work. So I started trying

to understand what was going wrong, via looking at specifications, blueprints, optical storage standards... and firmware documentation. Years of frustration, through a lack of lower level knowledge kind of got backfilled in university for me... where I learnt the art of ASM among other things. From there, I started to understand how the lower level hardware interactions took place and I haven't stopped since. As a result of all of this, I became involved with the development of the software DVDInfoPro... among other DVD applications and now work closely with vendors and optical storage companies in an attempt to make a better storage world for all!

atomic Do you think you'll always have an interest in optical storage? What makes it so interesting for you?

zebra I think I will have an interest in optical storage technologies as long as they exist and are a continually developing technology. I feel that if things keep progressing the way they are, I might be analysing and testing holographic storage technologies within the next five years! Ultimately, this is what makes the technology and field of storage so interesting to me... the progress and continual refinement/improvement. The other aspect of optical storage technology I find interesting (and always will) is the design and construction of the firmware. Over the space of five or six years, I have seen massive changes in the way firmware is designed, write strategies implemented and overall burn results 'sculpted'. Pulling these things apart and understanding how XYZ company has achieved a certain function or implemented a certain technique is always inspiring to me!

atomic What do you think of the future of optical storage (Blu-ray, HD-DVD, holographic, etc) as well as Digital Rights Management (DRM)?

zebra The future of optical storage technology is cloudy. My opinions on this will not be shared by all, but I feel that progress, in the context of consumer freedom, technological placement and uptake are severely hampered by DRM. One such example is the implementation of HDCP, which is, as we speak, making life a misery for consumers worldwide. Blu-ray, HD-DVD and holographic storage technologies offer so much for us and open up a world of useful media, but without the ease of use, or accessibility to the average consumer – ultimately, consumers will grow sour with the restrictions and resist change. Many argue that if the large corporations who implement such content protection methodologies push hard enough, the consumer will ultimately crumble. However, I feel the exact opposite is true this time around. I see another small uprising, just around the corner!



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